



Methods of Filling Teeth with Gold Inlays.*

By DR. THOS. P. HINMAN, Atlanta, Ga.

Bicuspid and Molars.

Cavities in bicuspid and molars, involving the mesial or distal morsal surfaces, but yet not large enough to require a cusp, are treated as follows: enough of the occlusal enamel must be cut away to give free access. The cavity should be extended to the buccal and lingual angles. These walls are made to converge slightly toward the basal wall which should be cut flat with a square end fissure burr. The anchorage is obtained by cutting a step in the enamel on the morsal surface. This step should be broadened bucco-lingually on the morsal surface to form a dcolhead and be of sufficient depth to secure anchorage to prevent the inlay from being dislodged by the stress of mastication even before it has become set with cement. (Fig. 38.) Polish the margins, removing any sharp points that would be liable to tear the matrix. The matrix is formed in the usual way.

Any tears caused by burnishing may be repaired by the use of pellets, provided these tears do not occur along any of the margins. In event of such marginal tear occurring, it is always best to start a new matrix, as the least bit of solder running through such a tear will cause a misfit of the inlay.

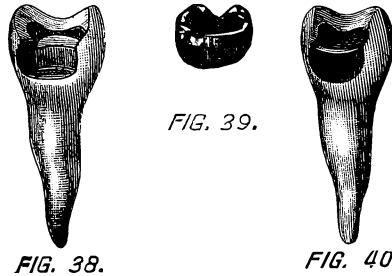
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ITEMS OF INTEREST

The matrix is thickened, reburnished and returned to the cavity; and an impression taken with modeling compound withdrawing the matrix with the impression. A model is run in sump and a narrow piece of 22-K. 28-gauge gold is formed to fit between the matrix and the adjoining tooth. (Fig. 39.)

This piece of gold plate should extend to the buccal and lingual borders of the matrix. The tooth containing the matrix is cut from the model and laid on a soldering block, the piece of 22-K. plate is fluxed, laid on the matrix at the point where the knuckle is desired and tacked to place with a small piece of 20-K. solder. More solder is added and the matrix filled until the inlay is complete.

The solder will follow the contour of the piece of plate, thus giving the inlay the desired form. (Fig. 40.)



Second Method.

Another more rapid plan, which is sometimes used, doing away with the impression and model, is as follows: after the matrix has been thickened and reburnished, it is left in position in the cavity. Take a piece of narrow 22-K. 28-gauge plate and fit it between the matrix and the adjoining tooth, giving it sufficient curve to cause it to fit tightly, knuckling up to the adjoining tooth.

The matrix and piece of plate are removed from the mouth and the matrix, without investment, is laid on the soldering block, the piece of 22-K. plate is fluxed and laid in position and tacked with a piece of solder.

Then, sufficient 20-K. solder is added to fill the matrix. This is a little risky, for if the matrix has any undiscovered hole which has not been previously filled, the solder will flow through and ruin the inlay; it is, therefore, safer when using this plan where no impression is taken, to invest the matrix before any soldering is attempted.

Third Method.

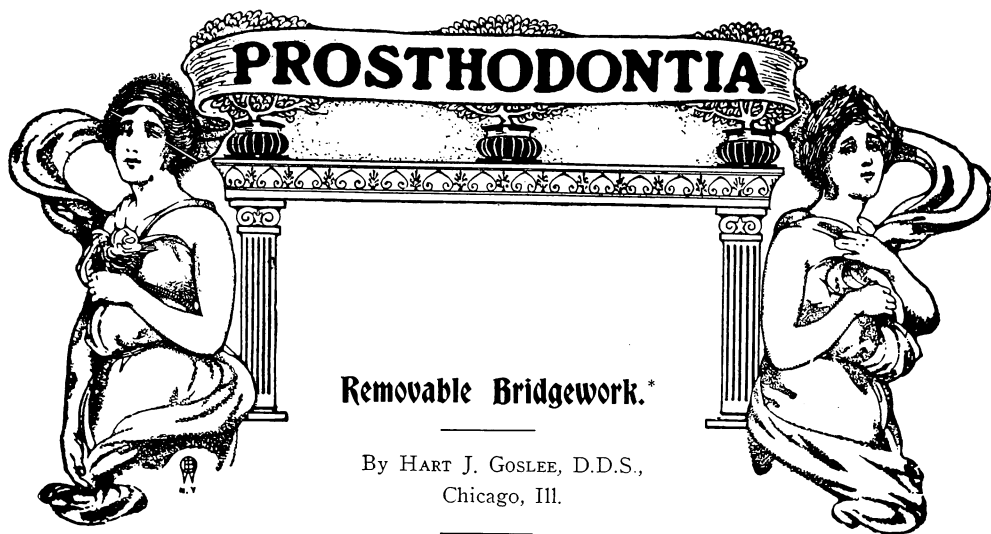
Another plan is sometimes used to advantage where no investment is made and that is to paint the surface of the matrix next to the cavity with a

solution of prepared chalk or rouge. This is done with a fine camel's hair pencil dipped in the solution. This coating prevents the solder from flowing on the inside of the matrix. If this solution is painted on the marginal lap, and the cavity margin that shows on the matrix is outlined, it will prevent the solder from flowing on the lap, thus producing an inlay much more easily finished. It is always wise in fitting inlays made after this plan to have the patient close the teeth with the inlay in position before cementation to see if it is too high on the occlusal surface.

If it is found too high, it can be removed from the mouth and ground to an approximate occlusion, thus avoiding unnecessary grinding in the mouth. The approximate surfaces of these inlays are polished and finished before setting permanently, leaving only the margins to be polished after the inlay is set. In finishing the occlusal surface, an ordinary round burr may be used to cut a sulcus to fit any sharp opposing cusp. The burr is much better than a corundum stone on account of its smaller diameter.

It is not necessary in making these inlays to obtain separation by wedging the teeth, as the knuckle can be reduced or increased at will before the inlay is set. However, in cases where the cavity extends well below the gum margin, it is better to pack the gum away with cotton for a few days or fill with red gutta percha, allowing to remain for several weeks as was Dr. Bonwill's practice. As the rubber dam is not necessary in setting these inlays, it is best to place a piece of cotton saturated with adrenalin well down between the teeth and against the gum and allow to remain several minutes. This not only stops the gum from bleeding or weeping, but causes the tissues to shrink temporarily.

In setting gold inlays which extend well below the gum margin, I have found oxy-phosphate of copper (Ames) to be most excellent. This should not be used anterior to the distal surface of the second bicuspid, as it is intensely black and will show dark through the enamel. It has the advantage of adhering firmly to a surface not entirely dry, setting with extreme rapidity under an application of heat, and is non-irritating to the gum tissue.



Removable Bridgework.*

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As designated in the chapter on Classification, etc., "removable" bridgework embraces that type of construction wherein the piece which supports the missing teeth is sustained in position by contact between it and the contiguous soft tissue, supplemented by some form of mechanical attachment to remaining natural teeth which will afford a means of temporary fixation and stability, and yet admit of the ready removal and replacement of the piece without disturbing the integrity of any of its parts.

Since the principal objection to the employment of "fixed" bridge-work lies in the unsanitary condition, which, to a greater or less extent, usually presents as a result of the application of permanently anchored pieces, and of the inaccessibility of some of their surfaces; and since the importance of *oral hygiene* is now so fully recognized, any methods of procedure which will promote this, will always occupy a more or less unlimited sphere of usefulness, and be welcomed alike by the conscientious, progressive operator and the appreciative and cultured patient.

Compared with "fixed" bridgework it is therefore obvious that this type of construction offers several features of advantage, and these may be classified as follows: *First*, and most important, the hygienic properties to be derived from opportunity to remove and cleanse the piece. *Second*, adaptability to varying conditions of absorption, occlusion and support, which affords a greater range of application. *Third*, opportunity for restoring lost tissue in cases of extensive absorption, thus making pos-

Advantages.

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sible more natural and more artistic results. *Fourth*, because of the support derived from contact with the soft tissues, fewer abutment teeth are mechanically required. *Fifth*, unless crowns are employed less mutilation of the supporting teeth is generally involved or demanded. *Sixth*, a greater longevity of those so employed is usually insured by the maintenance, to a greater extent, of their natural mobility.

From a careful analysis of these advantages it would seem that the indications for the employment of this type of construction must be more or less general, and that its application would in turn be quite universal. While this is true to a large extent, still "removable" bridgework will perhaps never entirely supersede "fixed" structures, and though doubtless more generally applicable, there will nevertheless be opportunities for the successful employment of each type in its proper place, and the selection of the one best adapted will be largely a matter of judgment and discrimination.

As a general rule, however, it is safe to conclude that "removable" structures are indicated in those cases where the conditions and requirements are *unfavorable* to the employment of "fixed" pieces.

Specifically this would confine the application to two general classes of cases, *first*, to those which demand the replacement of several teeth, and the restoration of considerable lost tissue; and, *second*, to those cases where the *number, position in the arch*, and integrity of the remaining natural teeth are unfavorable to the mechanical demands of a "fixed" structure.

The former class would thus include *extensive* bridges, or those demanding the employment of a "saddle" of such proportions as to admit of the required restoration, and at the same time demand removal as a means of sanitation; while the latter class would include those cases in which the utility of the remaining natural teeth is questionable, or is inadequate to the mechanical requirements because of looseness, or of being too far apart or otherwise unfavorably located in the arch, and where some form of support by means of contact with the intervening soft tissue is therefore required.

Incident to the application and construction of removable bridges the requirements demand, *first*, a close adaptation of the body of the piece to the soft tissue upon which it is to rest; and, *second*, a means of *attachment* to the supporting teeth which will admit of easy adjustment in removing and replacing the piece; afford a reasonable degree of stability and durability, and yet permit some slight mobility when in position in the mouth; and which will further possess sufficient inherent strength to insure reasonable permanency.



Attachments.

Thus like "fixed" bridgework it is apparent that the successful application and general utility of "removable" structures is also largely a problem of anchorage, or *attachment* to the supporting teeth.

This problem has engaged the attention of the profession for a number of years, and as a result innumerable methods of attachment to the remaining natural teeth, which would be an improvement upon the more simple and ordinary form of clasps, have been devised.

Many of these have been proclaimed a dental desideratum, and have been heralded to the profession as a means of revolutionizing the construction of all forms of partial dentures, only to be subsequently abandoned, however, as impracticable, because of being entirely too intricate, or as worthless, because of a lack of strength.

Clasps.

Some form of clasps, however, when properly adapted, is still to be regarded as the most simple attachment, and while its indiscriminate employment or its faulty adaptation may frequently prove injurious to the supporting tooth, or may sometimes even cause its loss, the fault lies more often with the operator than with the principle.

Requirements. In the adaptation of simple clasps to the crowns of natural teeth an observation of the following requirements will increase the opportunities for obtaining more or less successful results.

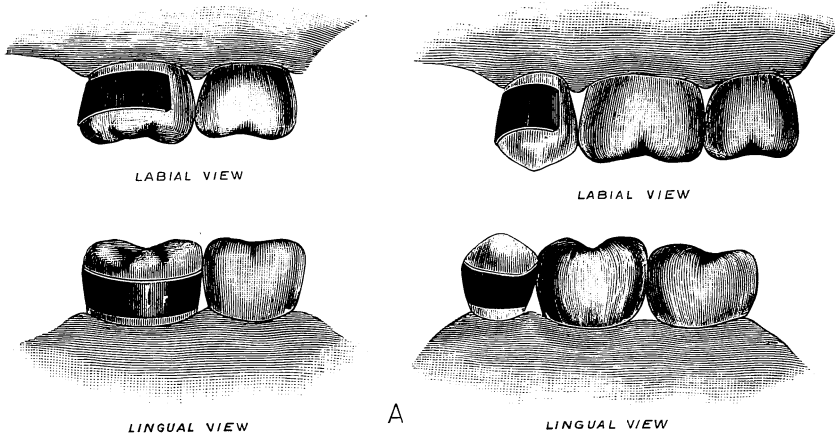
First. Where several natural teeth remain, in determining which ones to clasp, those should be selected which are of the most favorable shape, stability and position in the arch, and with approximately parallel axes, and as nearly opposite in their relation to each other as possible. In this connection it will be observed that the bicuspid's offer the most favorable shape for the adaptation of clasps; that the molars rank next in order, and that the cuspid's and incisors, respectively, are least favorable. Indeed, *clasps upon any of the six anterior teeth are rarely ever indicated, and seldom practicable.*

Second. The clasp should always be made of an alloy especially prepared for this purpose because of the necessity for a degree of springiness, or resiliency, which will admit of some expansion and yet offer sufficient resistance to return to its original form, and to thus insure a firm grasp upon the tooth. (See chapter on Metals and Alloys.)

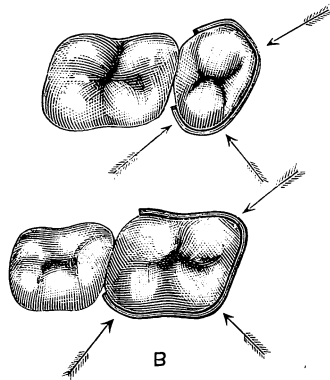
Third. It should be heavy or thick enough to more or less permanently retain its form, for which reason nothing thinner than from 26 to 28 gauge should be used.

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Fourth. In adapting it to the tooth the clasp should be as *wide* as possible, *not to interfere with the occlusion or impinge upon the gum tissue* (Fig. 360 A), and it should encircle at least three angles of the tooth's circumference. (Fig. 360 B.)



A
Fig. 360.



B
Fig. 360.

A wide clasp is preferable to a narrow one, for the reason that it will thus encompass the most bulbous portion of the tooth, and be sustained in its relation thereto by *frictional contact* at a few points.

Such a contact is desirable and advantageous because the possibilities of mechanical abrasion and ultimate disintegration of the enamel there-

from, or from chemical dissolution, as compared with a narrow clasp which is necessarily more closely adapted to the walls of the tooth, are thereby diminished; and it is necessary that it should encircle at least *three angles* in order that both ends may grasp the tooth in such manner as to sustain it in position thereon.

Fifth. In effecting this adaptation a plaster impression of the crown of the particular tooth to be clasped (Fig. 361-A) should first be obtained and then properly built up, so as to allow the pouring of a *fusible*

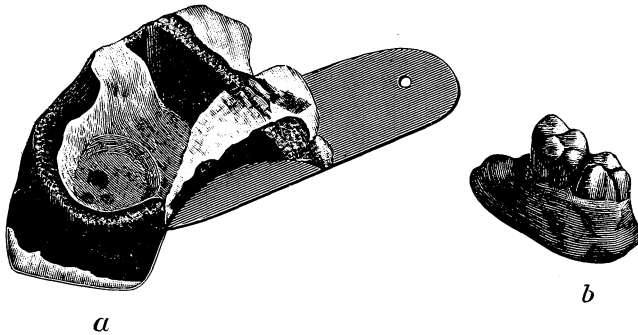


Fig. 361.

alloy model, showing just the teeth to be clasped. (Fig. 361-B.) The clasp should then be primarily formed and trimmed to the proper outline on the model, which may be done with ease because of its indestructibility. It should then be placed in position on the natural tooth and the adaptation perfected in the mouth, after which the final impression for the attachment of the clasp, or clasps, to the base should be taken with them in position. The most accurate method is to take a separate impression for each clasp, attaching them to the base one at a time.

Sixth. If the attachment is to be made to a metal base by soldering, the impression, with the base and clasps in position, should be filled with a small quantity of *investment material*, so that when separated the soldering may be done directly on the model, thus insuring the preservation of the proper relation.

When the case is to be of vulcanite, however, the impression should be filled with *plaster*, and when the model is obtained the clasps may be carefully detached therefrom, and anchorage pins, or projections, then soldered to them at the proper points, after which they should be replaced on the model (Fig. 362) and the case finished as usual.

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Seventh. In the attachment of the clasp to the base whether it be done by direct soldering thereto, as in the case of gold or platinum bases, or by the addition of pins, or projections for attachment to vulcanite, it must be observed that no interference with the *spring* of the clasp is

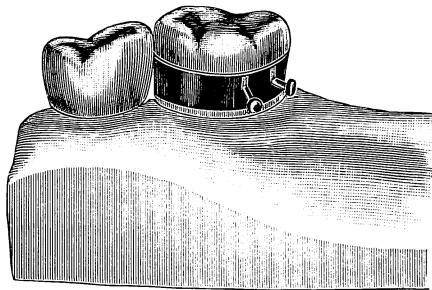
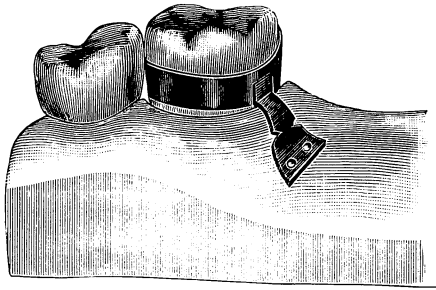


Fig. 362.

offered in either instance, and that each end is allowed to remain *free* from any contact or attachment which would impair its grasp of the tooth, and thus destroy its effectiveness as a *clasp*.

It is also necessary to observe that the attachment, or provision for attachment, be made at a point approximating a nearly perpendicular surface of the crown of the tooth supporting it, or, in other words, at a point where *no spring in the clasp will be required* in adjusting the piece to position.

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Also it must be further observed that adequate strength in the attachment of the clasp to the base be insured. This is a very important feature, as clasps are subjected to considerable stress, when in use, as well as when the piece is being removed or replaced, and it is therefore necessary to make every provision for obtaining the highest possible degree of strength in the attachment.

While the use of narrow clasps, made of ordinary clasp metal, or in the form of small round wire doubled upon itself, or of half-round wire with the flat side adapted to the tooth is sometimes recommended, any form of narrow clasp, such as is illustrated in Fig. 363, when adapted to the natural tooth, is usually to be condemned for the reason that the narrower



Fig. 363.

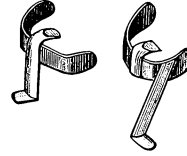


Fig. 364.

it is the closer it fits, or hugs, the tooth; and the closer it fits the tooth the more mechanical abrasion it causes; and the more abrasion it causes the more injury it does.

For the same reason the practice of first making the clasp of pure gold well adapted to the tooth, and then fitting clasp-metal over this and attaching the two with solder, is to be discouraged, particularly when the application is to be made to the natural crown.

Indeed, when simple clasps are to be used, and when they are to be supported by the natural crown of the tooth, those made in accordance with the above requirements, and sustained by frictional contact at a few points only, will be found to serve the purpose better, and to do less injury to the tooth than any of the latter forms.

Injury to the gum tissue surrounding the necks of all of the remaining natural teeth is also quite common in cases where simple removable appliances in the form of either "bridges" or "partial plates" which rest entirely upon the gum are worn. As a result of the continued irritation caused by the constant riding of the piece upon the necks of these remaining teeth, considerable gingival inflammation is usually present, and in

many instances this becomes so severe as to result in the ultimate loosening, or, possibly, in the loss of the teeth.

Such a casualty may be more or less entirely overcome, however, and any great extent of subsequent settlement precluded, by providing a rest which will cause the piece to ride largely upon the supporting teeth instead of on the gum tissue.

As a means of overcoming this possibility, and of also diminishing the devastating influence of abrasion resulting from the adaptation of the usual form of clasps, and of further obtaining increased stability in their attachment to the tooth, an occlusal rest constituting a part of the clasp was early advocated by Dr. W. G. A. Bonwill. (Fig. 364.)

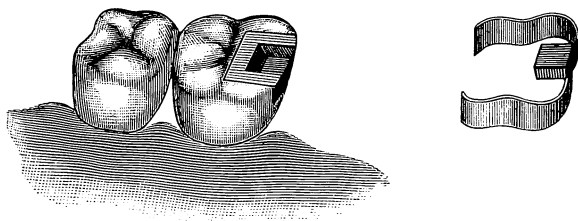


Fig. 365.

This type of clasp is still frequently used, often indicated and usually productive of good results. In constructing such clasps the occlusal rest should be made of a sufficiently strong material—plate or half-round wire—bent to the proper form, and subsequently attached to the clasp by means of solder, and the end should rest in and conform to the sulcus of the tooth so as not to interfere with the occlusion of the opposing teeth.

Greater integrity and a more secure fixation of the piece when in position may be obtained by inserting a filling and allowing the projecting end of the occlusal rest, which should be similarly attached to and thus become a part of the clasp, to fit snugly into a socket cut for its accommodation into the body of the filling as previously described and illustrated in connection with simple rests for “fixed” bridges in Fig. 261.

Indeed, whenever it may possibly be applied, this method of forming a clasp attachment for “removable” bridges, and particularly the procedure suggested by Dr. Ottolengui, which has been fully described, is to be regarded as among the most useful and highly practicable of all similar processes. (Fig. 365.) When *two* are employed on the same fixture, however, absolute parallelism must of course obtain.

Clasps Adjusted to Gold Crowns.

Because of the injury to the natural crown of a tooth supporting a clasp which usually occurs to a greater or less extent in time, and as a result of abrasion and chemical dissolution, it may often be desirable to first place a gold crown upon the tooth, and then adjust the clasp to it, for by this means the possibility of subsequent disintegration of the natural crown is entirely eliminated; a perfect adaptation and a more secure mechanical adjustment is made possible and greater permanency is insured.

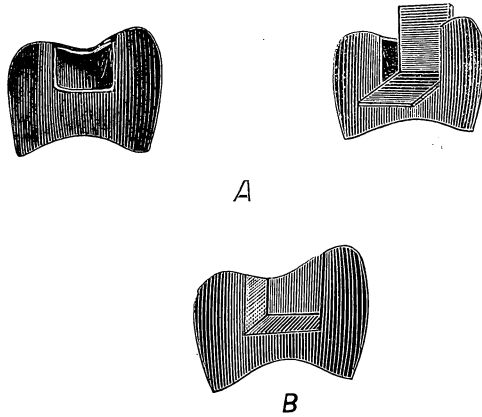


Fig. 366.

In the construction of a crown which is to be used for this purpose, however, two features should be observed. First, it should be made heavy enough to withstand the continued friction from contact with the clasp, and second, no great degree of lateral contour should be given to its form.

In observing the first, a form of gold—such as *platinized gold* which is somewhat harder or tougher than the ordinary plate should be used for the band, and it should be at least 28 ga. in thickness. The second requirement should obtain in order to admit of a close telescoping adjustment of the clasp to the crown, and to facilitate the removal and replacement of the piece, both of which would be more or less impaired if much contour prevailed.

In adjusting the clasp to the crown it should be adapted in accordance with the preliminary requirements in so far as size, form and relation are concerned, and if simple clasps are used this may be done after mounting the crown, or crowns.

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Clasps with Occlusal Rests Applied to Gold Crowns.

An occlusal rest is also equally applicable to gold crowns, and will add much to the stability of the piece. This may be obtained in the most simple manner by following the procedure described in connection with the Bonwill Clasp.

Or, if still greater stability is desired a socket for the reception of an interlocking rest may be made in the crown, and the rest adapted and adjusted to this as suggested in its application to fillings, and then attached to the clasp.

In this procedure the socket in the crown should be made after the cusps have been *attached* but *before* they are *reinforced*. This may be easily accomplished by cutting into the crown at the proper point and to the desired dimensions: fitting an "L" shaped piece of gold into this, thus forming a box (Fig. 366-A), and then completing the soldering and reinforcement of the cusps (Fig. 366-B), after which the rest should be accurately fitted therein, and then soldered in its proper relation to the clasp, when the crown may be mounted, and the impression subsequently taken with the finished clasp or clasps in position, as indicated.

Typical Application of Clasps.

While clasps are more or less generally applicable to a large variety of conditions, and particularly to the support of all forms of partial dentures where natural posterior teeth remain on both sides of the arch, there are nevertheless certain cases where they are especially useful.

Lower Cases.

A type of cases which is quite common and which will serve to illustrate one of the most practicable applications of clasps, irrespective of whether they are adapted to the natural crowns of teeth, or to gold crowns, is where the replacement of the *lower bicuspid*s and *molars* is demanded.

This condition, while more or less simple, is encountered so often as to require the very best type of construction, and this is usually to be accomplished by first making the clasps and then taking the impression with them in position on the teeth. When the model with the clasps in place is then obtained, a piece of 14 ga. round iridio-platinum wire should be conformed, by means of pliers, to the outline of the anterior part of the arch at a point well down toward the floor of the mouth.

When this adjustment is obtained the ends of the wire should be flattened on the anvil and then bent to conform to the requirements of attachment to the base.

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If metal bases are used they should be swaged and fitted previous to taking the impression, and should be in position in the mouth—together with the clasps—when this is done. The impression should then be taken in the same manner as indicated for “saddles” in fixed bridgework.

The flattened ends of this heavy wire should now be bent to come in contact with the saddle and then waxed in place, removed, invested and soldered thereto. When this is accomplished a projection of the same wire, slightly flattened, or of heavy clasp metal should then be fitted to

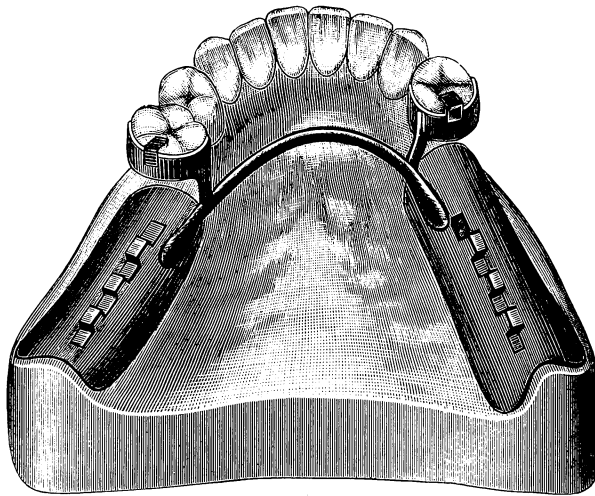


Fig. 367.

extend from the wire to the clasps and securely sustained in position with hard wax. The whole should now be carefully detached from the model and invested and then soldered (Fig. 367), after which the teeth may be attached with vulcanite and the case then finished.

If the bases are to be made of vulcanite, or when aluminum is used, the procedure is the same except that the flattened ends of the wire should be adapted to the model in such manner as to admit of being subsequently well surrounded with rubber, and then notched with a file so as to insure mechanical retention and strength in the attachment, after which the clasps should be attached with solder in the manner indicated (Fig. 368), and the case then finished as usual. (Fig. 369.)

The employment of wire in this manner offers greater strength and less obstruction to the tongue; less irritation and consequent injury to

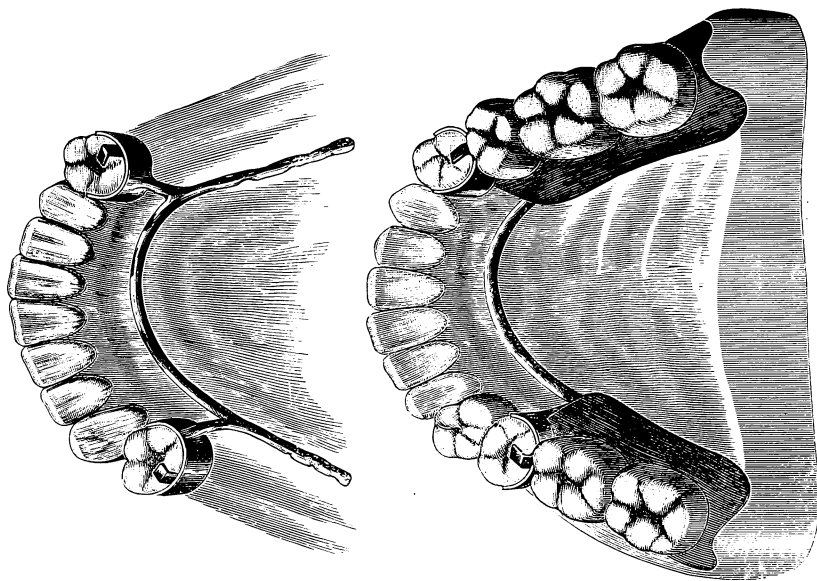
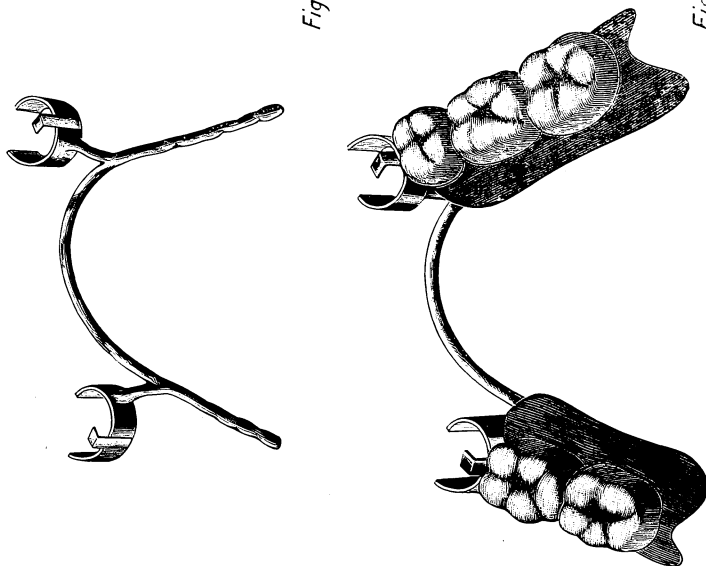


Fig. 368.

Fig. 369.



the gum tissue surrounding the remaining anterior teeth, thus increasing their longevity, and insures a more absolutely hygienic condition than may be obtained in other methods.

By a similar mode of procedure these same advantageous features are frequently to be obtained in construction of upper cases involving the replacement of some of the posterior teeth, but where at least one remains on each side.

Upper Cases.

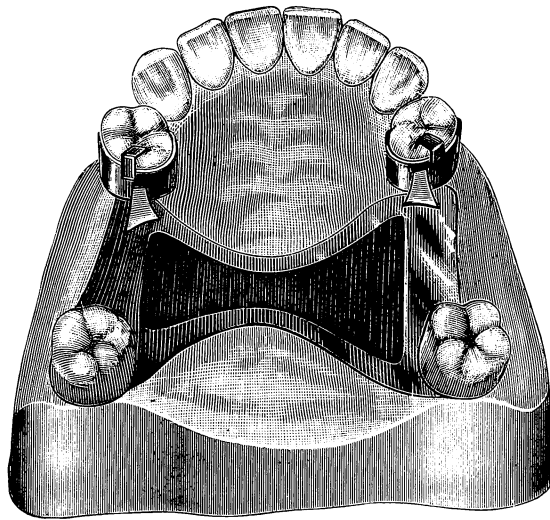


Fig. 370.

In such cases if the piece may be constructed of gold with vulcanite attachment for the teeth, or of platinum and porcelain, the covering of a very small portion of the palate will be required, and all contact with the necks of remaining natural teeth may be avoided (Fig. 371), while if vulcanite is used throughout, a greater area of the palate must of course be covered in order to insure sufficient strength, though contact with the necks of teeth may not be necessary. (Fig. 371.)

As applied to gold or platinum the base corresponding in size with that outlined, should be swaged of at least 28 ga. material, and fitted. The narrow connecting transverse portion which extends across the palate should be well reinforced by soldering thereto an additional piece of the same gauge, but somewhat narrower, also swaged between the same dies.

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This insures adequate strength in the base and when thus reinforced, the clasps should be fitted, the impression taken and their attachment then secured in the manner indicated, after which the case may be completed by attaching the teeth.

While the illustration shows the clasps adapted to the bicuspids, in similar cases they may be placed upon the molars. Indeed this would usually be preferable provided the shape and vertical pose of the molars were favorable.

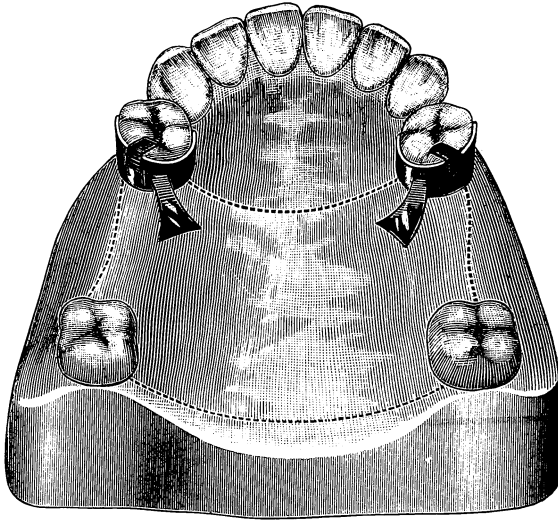


Fig. 371.

Clasps Applied to Porcelain Work.

Any of the various forms of clasp-attachments may be successfully applied to porcelain work in one or the other of the following methods of procedure.

If the clasps are to be attached to the base, and thus become a part of the metal substructure, before subjecting the piece to the furnace, they should be made of iridio-platinum and soldered with 25 per cent. platinum solder.

This is necessary in order that their attachment may not be disturbed during the fusing of the porcelain, and while the alloy of iridio-platinum is not very stiff nor springy after being annealed by passing through the furnace, still it may be used, and will answer the purpose better than any

other alloy which we have at present, capable of withstanding the necessary heat. It will, however, become harder and more springy as it is used, though perhaps never quite as resilient as clasp-metal.

Whenever it may seem best to employ the ordinary clasp-metal in the construction of clasps for porcelain work, this may be done by making a provision for subsequent attachment in building the platinum substructure, in a manner similar to that advocated in making *gum blocks*, and then attaching them to the piece with 18 Ka. solder, *after the baking of the porcelain*. This may be done without danger of fracturing any part of the porcelain if the case is properly invested and then slowly but thoroughly heated.

In both of the preceding methods, if preferable, any of the various other forms of attachment to the supporting teeth—which will be subsequently considered—may be used instead of clasps, but, by whatever means the attachment may be secured, this general type of construction—as applied to supplying posterior teeth in both upper and lower arches—is unquestionably the most useful and practicable, wherever it may be employed.

The Bryant Method of Clasp Attachment.

A form of clasp-attachment for removable dentures, which has been devised by Dr. Emory A. Bryant, will be found useful in many positions where one or more natural roots may be utilized for carrying a gold crown, and a variation also permits of its application to dowel crowns.

The advantage claimed for this method is rigidity of the fixture, which is held firmly against the gum, while lateral motion is likewise prevented. Unlike many other devices its usefulness does not materially decrease with wear, the clasp being made of platinized gold and therefore readily readjusted in case of slight loosening.

This form of clasp is indicated especially where bicuspid or molars are to be supplied, on one or both sides, and where there is at least one good bicuspid or molar root sufficiently strong to support a gold crown. Where the denture is to carry teeth on both sides of the arch, it is better of course if the Bryant clasp can be utilized on both sides of the mouth, but quite good results may be obtained with a Bryant clasp on one side, and an ordinary clasp on the other.

Briefly described this form of clasp attachment consists of a gold shell crown, to the sides of which is soldered an iridio-platinum wire,

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(usually two are advisable), the crown being cemented to a natural root and serving as an abutment. The clasp is bent around the crown and adjusted so as to snugly telescope over the wire or wires, and then is securely affixed to the denture.

Technique of Construction.

The gold shell crown having been made and accurately adjusted to the root, and occlusion, is placed in the mouth, and with a sharp instrument a scratch is made along its buccal surface, parallel with the long axis of the teeth in the mouth which are in normal position. The crown is removed and this scratch is slightly accentuated by further scratching, when it will be found that a piece of iridio-platinum wire, 18 or 19 ga. will rest on this scratch without rolling off, the crown lying on



Fig. 372.

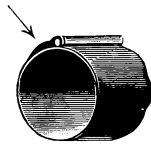


Fig. 373.



Fig. 374.

its side, in a little gully cut in the charcoal soldering block. The wire should be cut a trifle longer than the crown. (Fig. 372.) If the tiniest speck of 20 or 22 K. solder is dropped next to the wire, and the least bit of powdered flux sprinkled over the spot, the wire can be easily united to the crown without displacing it, by moving a brush flame over the whole till the solder flows. Powdered flux will be found better than liquid for this step of the work, as the boiling of the fluid is apt to displace the wire, and it is quite essential that the wire should be attached exactly along the mark. Next a little whiting and water is painted along the side of the wire which the end of the clasp is to engage, and when carefully dried will prevent solder from flowing on that side, the round surface of the wire on that side being thus preserved for the clutch of the clasp. When the whiting is dry, solder is banked up along the other side of the wire to form a surface flush with the crown. (Fig. 373.) Two methods of forming the clasp may now be followed. Where little spring to the clasp will be needed, clasp gold 28 ga. will be found easier to handle, and after it is properly shaped may be stiffened by flowing solder over its surface. In many cases, however, it is better to use 26 ga. even though it may be necessary to make the extreme ends of the clasp thinner by filing, or by hammering on an anvil with a light hammer. Whichever gauge is used the end of the clasp is first bent so as to fit over the wire

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and then is made to follow around the crown at least two-thirds of its circumference; farther if possible. Then the clasp is cut off of proper length to allow for turning the end at that point, which is to engage the second wire. Usually, if properly made the clasp will now hug the crown tightly, and the second wire may be slipped in between the clasp and crown. This is likewise cut off a little too long. The clasp is then removed and lightly coated with whiting on its inner surface; then replaced on the crown, and the second wire slipped in. This time it is set on the block with the occlusal surface up, and a speck of solder is dropped between the crown and the projecting end of the wire. (Fig. 374.) The brush flame of the blowpipe will tack the wire and crown together with little or no danger of uniting with the clasp, which may then be removed, and the wire more firmly soldered as was the first one. Fig. 375 shows the crown and clasp complete.



Fig. 375.

The crown may then be placed in the mouth with clasp in place, and the fixture to which it is to be attached held against the roof of the mouth firmly with one finger while an impression is taken in plaster of Paris. The fixture and the clasp are put in proper place in the impression, but the crown itself is omitted. A model is poured with a good investment compound, and the clasp united to the fixture either direct, or by a connecting bar, according to the exigencies. Where such abutment can be arranged on both sides of the mouth it becomes essential to observe that the telescoping wires are all parallel with one another. This may be accomplished by making a model from an impression taken with both abutment crowns in the mouth and then, by utilizing any of the many paralleling devices the scratches on the buccal surfaces of the two abutment crowns may be made parallel. Those on the lingual surfaces usually are made right by the clasp directing them to proper place. In cases where the teeth are badly tipped it may become necessary to reverse the order of the work; that is the wires may be placed on the lingual surfaces first in which case of course the paralleling device is used for making the marks on these surfaces.

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Where it is desirable to arrange for an occlusal rest it may be accomplished in several ways. If the cusps of the crown be made solid, a square cavity may be cut therein and a lip of the clasp turned over to drop into this box. Such a lip should be reinforced with a piece of iridio-platinum wire and solder (Fig. 376). Figures 377 and 378 show a denture with this style of clasp.

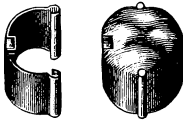


Fig. 376.



Fig. 377.

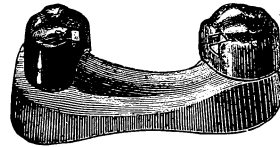


Fig. 378.



Fig. 379.



Fig. 380.

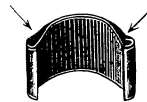


Fig. 381.



Dr. Ottolengui, who has used the Bryant Clasps extensively, especially in the construction of cleft palate carrying-plates, prefers either of the following methods. Sometimes he runs a piece of soft platinum wire along the surface of the shell crown close to the gum, attaching and stiffening the same with solder, and then the lower edge of the clasp is beveled to drop into the groove made by the upper edge of this wire. (Fig. 379.) In other cases, where the edge of the clasp will not irritate the

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tongue or cheek he cuts the end of the telescope wires a little shorter than usual, squares them and then by soldering a tiny piece of clasp gold over the top of the clasp where it is bent to engage the wires, thus forms a boxing which, resting against the top of the telescoping wire, prevents the clasp from going further down. (Fig. 380.)

Where a cuspid or first bicuspid is to be utilized as an abutment the display of gold may be avoided by slightly varying the method. A dowel crown may be used, and grooves cut in the gold along the mesial and distal sides, and the ends of the clasp are then turned in so as to play in these grooves; this is somewhat similar to the arrangement in a staple crown, except that the fixture is removable. (Fig. 381.) Where an all porcelain crown is desired, the construction should include platinum sides, with the grooves already made, prior to adding the porcelain body.

Special Methods.

With the hope of improving upon the various forms of clasps, and of obtaining a means of fixation which would possibly be less injurious to the supporting teeth, and more secure and permanent, any number of special methods have been designed.

While many of these, among which may be mentioned a few such as those of Starr, Winder, Parr, Richmond, Curtis, Alexander, Rhein, etc., have served their purpose by at least aiding in the evolution of more practicable procedures, most of them have proven to be either too intricate, or too limited in their range of application, and have, therefore, been more or less abandoned.

For this reason no effort to describe any of them will be made, and hence only those which are used at the present time, and which are regarded as possessing some features of merit, some range of application, and some degree of usefulness, will be presented.

Peeso's Methods.

Among these the practical and ingenious methods of attachment extensively used by Dr. F. A. Peeso of Philadelphia, are particularly useful. These embrace three styles of attachments and an interlocking rest, and when selected and used judiciously cover a wide range.

Tube and "Split-Post" Attachment.

As applied to obtaining a removable anchorage adapted to the roots of teeth the type of attachment designated as the "tube and split-post"

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crown is probably the most useful. This involves the construction of a telescoping dowel crown, part of which is permanently fixed to the supporting root, while the crown portion telescopes into and over it, and is removable.

Indications. While this form of attachment is applicable mainly to the anterior teeth, where a dowel crown would usually be indicated, the same principle may also be used upon the bicuspid, or any of the anterior teeth provided their size is favorable; but as considerable sacrificing of tooth structure is demanded it is more particularly applicable to the roots of upper cuspids and sometimes bicuspid and central incisors, or to those which are large enough to admit of the necessary preparation.

Technique of Construction.

The technique of construction involves the preparation of the root in the usual manner as for dowel crowns with a band, after which the *cap*, which is to be permanently anchored thereto, should be constructed as follows.

Cap and Tube. A band of about 30 gauge gold is fitted to the root, and carefully festooned to follow the cervical margin of the gum, after which it is removed and the end of the root is then cut down to a point just below the gum on the labial or buccal side, but leaving it about one-sixteenth of an inch above the gum margin on the lingual side. The band is now placed in position and marked around the inside, close to the edge of the root, with a sharp instrument. The canal is then enlarged to the size of the *tube* which is to be used, and the latter should be made of coin or 22 K. gold, or of platinum, about 34 ga. If a gold bridge is to be made, the bur or reamer should be leaned slightly toward the lingual side, thus sloping the enlarged canal in that direction, so that when the tube passes through the floor there will be ample room on the labial or buccal side for the facing. If there is sufficient space, however, to admit of using a porcelain bridge, this is unnecessary. The tube, after soldering the seam, and closing the apical end with a small piece of plate, is then rounded on this end and fitted to the canal, and a plaster impression, just large enough to sustain the relation of the band and tube, is taken.

A small model is then made, the inside of the band and the outside of the tube having first been given a very thin coating of wax to facilitate their removal therefrom. The band is now cut off to the line indicated by the scratching, and then trimmed flush with the end of the root, filed so that it is perfectly flat, and a floor of 28 gauge gold soldered to it. A

hole is next made in the floor and the tube waxed and soldered the same as the dowel would be in the ordinary cap, after which the open surplus end extending above the floor is cut off and the cap finished and polished. (Fig. 382.)

Crown and "Split-Post."

The removable part of the attachment is made as follows: The "post," of half-round iridio-platinum, or platinized gold wire, is bent double upon itself, the ends just caught with a little pure or coin gold,

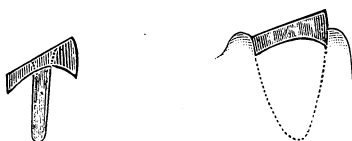


Fig. 382.

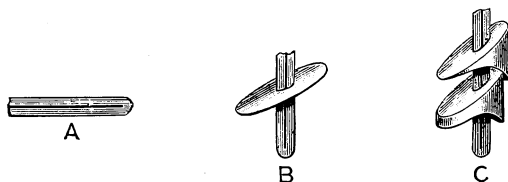


Fig. 383.

and then filed or turned to exactly fit the tube in the cap. (Fig. 383-A.) A floor of 28 gauge gold, or of iridio-platinum, if the piece is to be of porcelain, is then drilled so that the "post" will fit tightly, and waxed in place, removed, invested and soldered. (Fig. 383-B.) After cleaning in acid, it is replaced on the lower cap, trimmed even with the sides all around and a half band of 28 gauge gold or iridio-platinum fitted to the lingual side, reaching only to the gum line, and toward the buccal side to a point about where the facing will reach, when it is waxed, removed and soldered. (Fig. 383-C.) The inner cap is then placed on the root and, with the other attachment also in place, the bite and impression should be taken, the facings selected and the bridge then completed in the usual manner.

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Molar Attachments.

As applied to molar teeth two forms of attachment are employed, one involving a combination of a telescoping gold crown and a tube and "split-post," and the other an inlay in conjunction with the same means of anchorage.

Telescoping Crown and "Split-Post."

In the construction of the style of attachment which involves a gold telescope crown and a "split-post," the tooth is devitalized and prepared as for a full gold crown, the occlusal surface being cut short enough to allow for good thick cusps. A band is then made so that its sides are exactly parallel, or very slightly larger at the *neck*, and fitted to conform closely to the tooth, passing about one-sixteenth of an inch below the gum, and

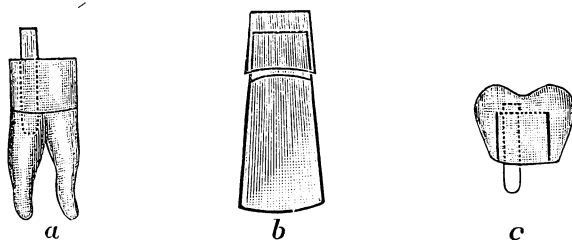


Fig. 384.

then marked around the inside even with the top or occlusal end of the root. A tube of suitable size is used, resting it on the *floor* of the pulp chamber, or if this is very shallow one of the canals may be enlarged for a little distance, and the tube adjusted in place so that it is exactly parallel with the sides of the band. (Fig. 384-A.) An impression is now taken to preserve their proper relation, the *band* and *tube* waxed in the same manner as described in the former attachment, and the model made from hard plaster. After it has been separated, the band and tube are heated slightly and removed. The band is then cut off even with the occlusal surface of the root, as previously marked on the inside, filed perfectly flat and a floor of 28 ga. gold *sweated*, or soldered to it with a minute quantity of solder, after which the tube is fitted and soldered and the cap finished the same as in the case of the former method. The whole inside of the band is now given a *very thin* coating of wax and then filled with *fusible metal*. The outer band is made a little small and driven

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over the reinforced inner cap to within about one-sixteenth of an inch of its lower, or cervical, edge, so that it will only reach to the gum line and not go below it. (Fig. 384-B.) It is then cut off and filed flush with the inner cap and the floor sweated or soldered to it. Cusps and suitable contour to meet the requirements of occlusion, contact, and alignment are now added to this, and the split pin at the same time soldered in place, letting it extend a little above the floor so that it may be firmly attached to the cusps. After the cusps have been made or selected, they are made solid and the under surface filed perfectly flat and soldered to the cap, a hole having first been drilled through to receive the head of the "split-post." The contouring of the sides may then be done with a high karat solder and after it is finished and polished, it presents the appearance of an ordinary properly contoured full gold crown. (Fig. 384-C.)



Fig. 385.

While simple telescoping crowns are not successful as a rule, this method of procedure affords one of the best, most secure and permanent means of attachment, and when completed, both parts should be placed in position on the root, together with the other attachments, and the "bite" and impression taken, after which the bridge may be completed in the usual manner.

The other form of attachment to molar teeth involves simply cutting a cavity and employing an inlay and "split-post." In this procedure the tooth is devitalized and cut on the occlusal surface about one-half the length of the crown and down on the mesial side to allow for a heavy round bar of about 13 ga. and a good thickness of gold. The pulp chamber is filled with gutta-percha and the cavity shaped as illustrated in Fig. 385, leaving the sides curved and non-retentive. Pure gold about 34 or 35 gauge is then burnished into it as for an inlay, being careful to have the margins perfect. A hole is then made near the distal end of the matrix and through the gutta-percha to the floor of the pulp chamber and in it is placed an iridio-platinum tube large enough to take a 13 or 14 ga. wire post. Wax is now packed tightly in the matrix and around the tube, and it is then removed and after placing a piece of pure gold across the approximal side so that it can be entirely and evenly filled to that point,

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it is invested and filled with coin gold, thus making a perfect gold inlay with a tube extending through it. (Fig. 386-A.) A groove is now cut from the tube to the mesial end of the inlay. The bulk of the cutting can be quickly done with a thin, round-edged carborundum wheel (Fig. 386-B), and finished with a fissure bur of the same size as, or very slightly larger than, the inside diameter of the tube. A flame-shaped finishing bur can be used to round the corner at the entrance to the tube and to give a slight downward slant to the mesial end so that the bar

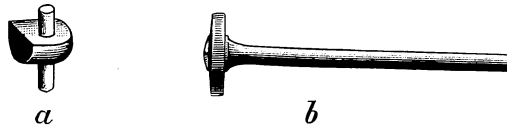


Fig. 386.

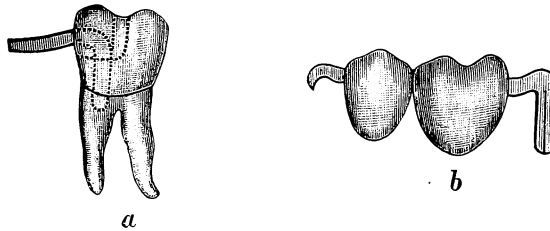


Fig. 387.

will not come above the cusps of the dummy. Figure 387-A shows a section of the inlay and tube in position in the tooth with the bar and "post" in place. The latter is made of halfround iridio-platinum or platinized gold wire, bent double and soldered to within about a quarter of an inch of the end and filed or turned to exactly fit the tube and grooves. It is then bent so that it will lie in the groove closely and the closed end filed so that the "split-post" can be slightly opened, giving it a spring which will hold the piece firmly in place. The inlay with the "post" in position is then placed in the tooth and the "bite" and impression taken in plaster, the inlay coming away in the impression. The model is then prepared and the bridge made, the bar being soldered firmly into it. (Fig. 387-B.) When it is finished, the sides of the inlay are roughened or grooved slightly, and it is then connected with the bridge and cemented as though it were a fixed piece.

This attachment has been employed by Dr. Peeso with great satisfaction for a number of years in molars and in a few instances in bicuspid, but in the latter application good judgment must be used, as a bicuspid is much weaker than a molar. The same principle in a modified form, and applied to *gold crowns*, has also been used for a long time with unvarying success.

Interlocking Occlusal Rest.

An interlocking occlusal rest to be used upon one end of a bridge, in conjunction with one of the preceding attachments upon the other end, and which, when indicated, and particularly when adapted to molar

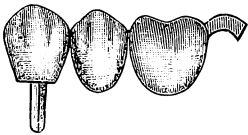


Fig. 388.



a



b

Fig. 389.

teeth, as illustrated in Fig. 388, serves the purpose nicely, is made as follows:

A cavity is made in the mesial side of the crown of the molar, extending distally to about half the length of the occlusal surface (Fig. 389-A), and a *hard* gold filling very thoroughly condensed and perfectly made of No. 60 rolled gold, inserted. A groove, countersunk at the distal end far enough from the mesial so that there will be no possibility of its giving way under the stress of mastication, is then cut in the filling. Fig. 389-B shows this in sectional view. The bite and impression is now taken with the rest, and other attachment, in place; the model obtained, and the bridge made and finished as usual. It is usually best to put an orange wood stick or something similar between the abutments in order to keep the space from closing up while the bridge is being made, as sometimes the teeth will move very rapidly. The rest can be made of round iridio-platinum or platinized gold wire of No. 14 to 16 gauge.

When this type of support is used in conjunction with a tube and "split-post" attachment, as in the case illustrated, the fixture is very strong, the bar resting in the gold filling in the molar getting the full support of that tooth, and the hook overcoming the possibility of the teeth spreading, while the "split-post" and half band crown on the other end holds the piece rigidly in place. If it is to be a porcelain bridge, a

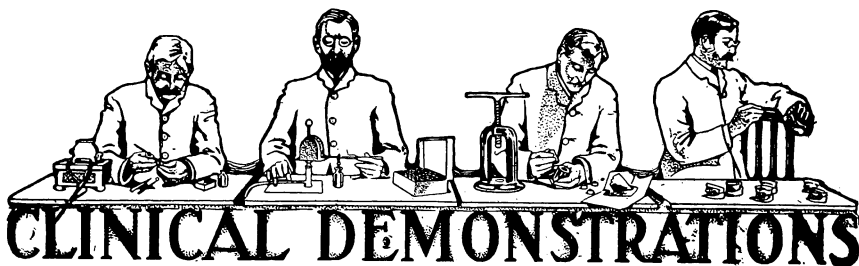
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very thin piece of mica should be placed between the halves of the "split-post" in order to prevent their being soldered together while the piece is being baked.

In the hands of a skilled operator these methods are eminently successful and afford opportunity for obtaining most practical and artistic results, but the detail must be very carefully executed, else the work will be a failure as a result of the extensive weakening of the supporting teeth; or of faulty adaptation, or of lack of perfect parallelism between the parts.

The permanent mounting of the parts which are to be affixed to the roots with cement, should never be made until the case is completed, and the whole fixture should then be forced to place at the same time in order to insure the proper adjustment.





An Ideal Abutment for Small Bridges.

BY E. B. PRENTISS, D.D.S., NEW YORK, N. Y.

Clinic before New York State Dental Society, May, 1906.

One of the most troublesome cases with which the average operator has to deal is the supplying, by artificial means, of a single tooth such as a molar or bicuspid. These cases would not be troublesome if the conditions were always what we would desire.

There would be neither hesitancy about supplying such a space with a strong as well as artistic piece of bridgework; nor very much doubt as to the best method to pursue, if the adjoining teeth on either side were found to be badly broken down, yet having firm roots upon which to construct the abutments.

In such a case everything is ideal for the very best, and our problem is greatly simplified. The one greatest objection, the dread of sacrificing tooth structure, has been eliminated; and the operator may go ahead boldly, using any one of the many old and reliable forms of crowns as supports.

The cases which do give us the most trouble, or at least have always been to me the cause of the most worry, are those with one tooth missing (usually a bicuspid or first molar) yet having a perfectly strong, sound tooth on either side. That space should be filled: but how?

Any one would hesitate a long time before cutting off such a bicuspid for the attachment of a crown as the anterior support: and I think most men would also hesitate before shaving down a sound molar sufficiently for a shell crown. In my practice this method has been abandoned entirely and I have always looked for some means of fastening the tooth by less destructive attachments.

Having found the various forms of inlays an insufficient and unreliable support I have tried the use of staples in several ways; nearly always

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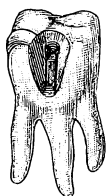
with good results, but with more cutting of tooth structure than desirable. The method of cutting a groove all the way from the mesio-gingival border up over the occlusal surface then onto the distal surface where another tooth is to be found in direct contact with it, constitutes in my judgment a very dangerous operation. That groove in the approximal space must of course form a weak point and no matter how well the staple may be fitted and the gold burnished, the fluids of the mouth are constantly held in suspension directly on the margins of the finished piece where decay is almost certain to undermine it in the course of time. The fact also that it is extremely difficult to properly cut that groove and fit the staple and gold into it, adds very much to the danger. In that method also the palatal cusp is usually cut away to be replaced by a gold masticating surface, the half cap thus formed extending from the staple in the groove to the gum line over the entire palatal surface. This makes a very strong anchorage as well as an artistic one; for the buccal cusp is left intact and no gold is allowed to show. It is, however, too destructive, especially when one considers that such a sacrifice is made for one tooth only; and too dangerous on account of extending the groove into the approximal space.

In casting about for some simple process I have not by any means disregarded the staple. The mistakes which I have made in its use have pointed out what I think is a much simpler way of using it, and one that is not fraught with danger; at the same time avoiding so much needless cutting of tooth structure.

Method of Procedure.

My method of procedure I will describe in detail making use of the cuts to illustrate. In the first place we nearly always find a more or less V shaped space where such a tooth has been lost. This is caused by the bulging of the teeth mesially and distally near the occlusal surface. Fig. 4. After I have selected a fissure bur the size of an 18 gauge wire (19 gauge is used for bicuspid) I cut a groove from the mesio-gingival border up over the mesio-occlusal angle and to the central fissure of the molar. A hole is then drilled directly toward the center of the tooth on a line parallel with the direction of the groove on the mesial surface: this is extended as deep as the safety of the pulp will allow. Then with a rather large corundum stone I bevel the mesial bulging surface of the groove quite wide, running the stone up and down along the groove until the bevel has attained quite a width on the most bulging point. With a smaller stone the occlusal part of the groove is then beveled; with the result as shown in Fig. 1. The shape is very similar to a cone with its apex at the cervical border. A piece of 18 gauge iridio-platinum wire is then bent into a staple so as to exactly fit in the groove (Fig. 2) after which

an impression may be accurately taken in Detroit Compound by making it into a pencil and pressing it firmly against the staple while in position. The staple must be taken out in the impression which is filled with plaster. On the cast obtained a piece of pure gold 36 gauge is burnished, being careful to press it well into the groove around the staple. The mark of the staple will be seen on the under surface of the gold and if the two are put into position and held lightly with a pair of pliers they can be easily tacked with solder at one point. The piece is then placed back on the cast and reburnished, after which it should be trimmed to the same cone



a



b

FIG. 1.



FIG. 2.



FIG. 3.

shape as the bevel on the mesial surface, always leaving a little overlapping all the margins. (Fig. 3.) I am now using the molar for my description, but of course in constructing an actual case the two abutments are carried along together. Both having now been placed in position a plaster impression is taken bringing the two pieces out in their proper places in the impression.

On the cast which is obtained an iridio-platinum wire is bent so as to dip down away from the bite and tacked at both ends (Fig. 5). This is done to stiffen the piece so that it may be used for trial in the mouth and also to prevent warping in soldering. If the bevel has been properly made the piece will slip in and out without much difficulty; but if it does not the groove may be beveled wider and deeper at any point and the pure gold reburnished to conform to it. Fig 4 gives a side view of the teeth showing the piece in position and also clearly showing the V shaped or undercut space between the two teeth which would make it impossible to get the bridge on or off unless the beveling were properly done.

Fig. 5 shows side view of both abutments when held together by the bar. A wax bite may be taken with the piece in position and then a plaster impression, which I always pour with tenax instead of plaster. It is an excellent investment and the bridge can be soldered on it without re-

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moving. If one desires, a facing may be ground in position and waxed to the bar while the piece (Fig. 5) is in place on the teeth; then it may be removed and invested for soldering.

Saddle-back teeth may be used instead of ordinary facings if one desires a porcelain occlusion. In such conditions when the connecting wire is bent it should be brought very near to the gum so as to allow the saddle-back to be placed over it. After the tooth is backed and placed in position it can be invested and soldered as usual.

In case the tooth to be supplied happens to be a first bicuspid instead of a second, which has been described, then the plan of construction on the cuspid is varied slightly, although the principle is the same.

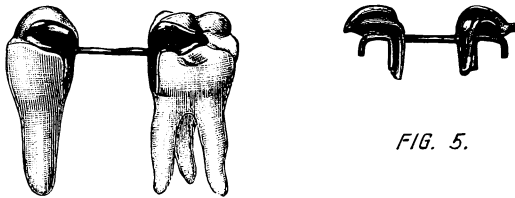


FIG. 4.

FIG. 5.

Application to Cuspids.

I usually drill two holes (size of 19 gauge wire) one on each side of the pulp and on a line parallel with the groove in the bicuspid, then with a bur the two are joined together after which the groove thus formed is beveled with a small stone. A staple is then fitted into position. Now to protect the distal surface of the tooth which comes in contact with the bridge I cut out with a large bur a shallow cavity to cervical border but wide enough to extend beyond the contact point buccally and lingually.

Pure gold is then burnished over the entire surface of the beveled groove and cavity, and soldered to the staple; then it may be reburnished and the bridge finished as before described.

Slight variations may be made in constructing such a bridge as the case may demand, but I believe that the greatest strength, the most artistic results possible may be obtained by this plan.

The finished piece is more artistic than if anchored by ordinary gold inlays and yet it is strong enough to bear any strain which might be brought to bear on one tooth.

Best of all, however, one's conscience will not trouble him on account of needlessly mutilating two strong teeth for the sake of replacing one.

The Double Gold or Aluminum Denture.

A Method of Attaching Teeth to Gold or Aluminum Without Showing Any Vulcanite on the Lingual Surface.

W. CECIL TROTTER, B.A., D.D.S., Toronto.

Clinic before the New York State Society, May, 1906.

The large, unsightly area of vulcanite exposed on the lingual surface and heels of artificial dentures made on a metal base has always been

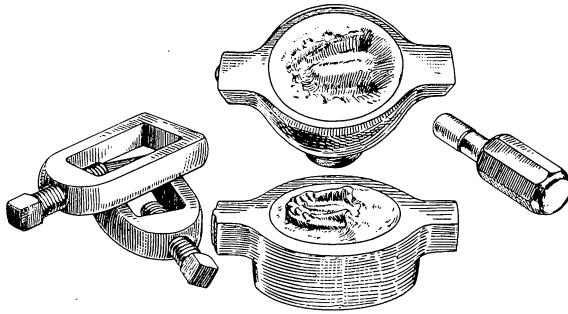


FIG. 1.

very objectionable. The only way to avoid this in the past has been to discard vulcanite and to solder the tooth to the plate instead, an operation which few dentists had the courage to attempt on account of the time and material consumed, and the risk of checking the teeth. Then when the denture was completed it was liable to become very disagreeable and foul owing to the leakage of fluids of the mouth into crevices between and around the teeth. The usual results can be accomplished with very little trouble without soldering the teeth, and at the same time produce a stronger and more sanitary denture. The method is as follows:—

Take an impression of the mouth, preferably in plaster, and pour with low fusing alloy before it dries out and changes shape. The alloy which I find most satisfactory for this purpose is the Olivian Alloy which is supplied with the plate-swager of the same name. It melts below the boiling point of water and therefore does not generate steam when poured into a moist impression, and makes a very accurate die. After

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softening the impression compound in the lower half of the swager with heat, imbed the metal die in it so as to have the depth of the alveolar ridge above the level of the rim of the swager as in Fig. 1. A piece of thin aluminum or gold (gauge 35-37) is now swaged to accurately fit the die by means of the flexible counter die material in the upper half of the machine. (Fig. 2.) Forty minutes from the time of taking the impression will usually accomplish this. It is a very simple matter at this stage of the process to insert a wire rim or margin all around the rim of the plate

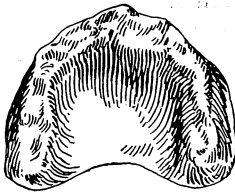


FIG. 2.



FIG. 3.

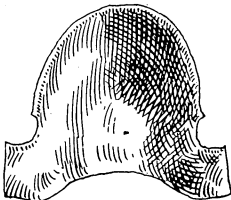


FIG. 4.



FIG. 5.

by simply allowing a flange of the gold or aluminum to project around about the plate line and swage a piece of wire to fit the plate line; then double back the extending flange of the metal so as to closely enclose the wire rim, taking precautions to leave sharp jagged edge at intervals around the plate for the retention of the vulcanite.

After having tried in the mouth and taken an articulation, wax up the teeth on the metal base plate in the usual way and then invest with plaster in the lower half of a vulcanizing flask, and with a piece of soft plaster take an impression of the lingual surface of the plate and teeth. Pour the impression with the low fusing metal and upon the metal cast thus obtained (Fig. 3), swage another piece of thin gold or aluminum by means of the swaging machine as in Fig. 4.

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Now fit the second piece of metal into its place on the top of the first piece in the lower half of the flask, in such a manner if possible as to have the margins sit beneath shoulder of teeth. Pour the upper half of the flask and separate. The teeth with the second piece of metal will pull over with the plaster in the upper half of the flask. Remove all wax, and if aluminum is used score and prick the contiguous surface of the two pieces of aluminum so as to afford firm attachment for the vulcanite. If gold is used the two pieces may be removed from the flask and soldered together with a very small amount of solder before packing and vulcanizing. (Fig. 5.) When aluminum is used the precaution should be taken to pack pieces of pink rubber between the two layers of metal so that when the flask is put in the press the vulcanite will be squeezed through into every possible crevice that might exist between the two layers.

When complete the denture will present an entire metal surface over the whole of the lingual surface and heels, the only place where the vulcanite appears being the pink gums. This double layer denture is very little thicker than one made of a single layer, is much stronger and usually fits the mouth better, because it is always possible to swage a thin piece of metal more accurately than a thick piece. If modern methods of swaging are used in place of the old-fashioned, inaccurate, time-consuming way, it will not take more than an hour to an hour and a half longer to make this denture than to make one entirely of vulcanite and the advantages when finished are certainly full compensation.





Duplication of Models.

BY DR. WALTER H. ELLIS, BUFFALO, N. Y.

Read before the American Society of Orthodontists, Chicago, 1905.

The sculptor and professional plaster men have long been familiar with methods for the duplication in plaster, of statuary, busts, bas reliefs, etc. It is but recently, however, that our profession has felt the need of familiarity with the technique of any of these processes. More especially has the orthodontist, with his many valuable models, wished for a process by which to duplicate them and it is with his needs in view that this paper has been prepared.

Any method that we may adopt will probably be along the lines used by the sculptor in similar work, with certain modifications to meet the requirements peculiar to our needs.

In order to cast a duplicate there must first be constructed, over the original, some kind of a mould in which to run the duplicate. There are three kinds of moulds in which plaster casts can be made; waste moulds, piece moulds and elastic moulds.

Various Forms of Moulds.

Waste moulds are of no value for the duplication of the orthodontist's models, but it is by this means that we get the original, for the impression and subsequent cutting away is a form of waste mould.

"A piece mould is made up of a number of pieces so arranged that

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they can be placed together to form the mould.” These pieces are sometimes very numerous, the Venus de Milo requiring three hundred. If the original be of plaster, it is first varnished with shellac and oiled. This fact alone would condemn it for our use as we wish to keep the original as clean and fresh as possible. This form of mould is the one used in making plaster duplicates of antique statuary.

Elastic moulds are the best and most practical for the duplication of the orthodontist's models. “These moulds are made of elastic material which will spring back into its original shape after being pulled from the cast and are kept in shape by an outer shell or case. The greatest advantage of this form of mould is the accuracy, ease and rapidity with which duplicates can be made.”

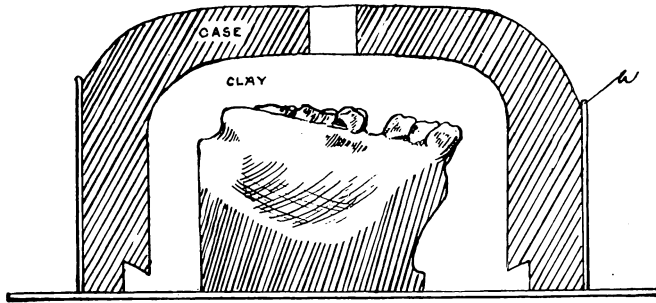


FIG. I

Elastic moulds are prepared by the use of gelatine and glue alone and in combination with wax, paraffine, glycerine, etc., but the best grade of gelatine will be found most satisfactory for our use.

The first step in the process is the preparation of the shell, or case which confines the gelatine while hardening around the model and serves later as the case to hold the gelatine mould in place while running the duplicate. Wrap the model that is to be duplicated with bibulous or tissue paper to protect it from the clay with which it will next be encased. Make this layer of soft moulder's clay about three-fourths of an inch in thickness, covering the top and sides but not the base. The thickness of the clay determines that of the gelatine mould. Place the model with its clay covering upon a glass slab. Put a small block of clay upon the top (Fig. 2-b) to form the opening in the case through which the gelatine will be poured. Wind a thin strip of clay (Fig. 2-a) around the sides close to the base, the upper surface of which should slant down as well as in, in order to form a slight undercut groove

Preparation of Shell.

in the base of the case, which will later serve the purpose of keeping the gelatine mould firmly in the case when the duplicate is being run. When this is done, build up a case of plaster over the clay. This can best be accomplished by first building up a wall of clay (Fig. 1-A) standing about an inch away from and around the model which will confine the plaster. When the plaster has hardened, remove the clay wall and take out the model. The case should be trimmed and shaped, and its inside given a good coat of shellac varnish, when it will appear as in Fig. 3-A. It is here shown with its gelatine mould. (Fig. 3-B.)

It is unnecessary to make a new shell for every model duplicated, for after having made a few, one can readily be selected to fit any model. These shells are fairly serviceable, but being of plaster, will, with frequent

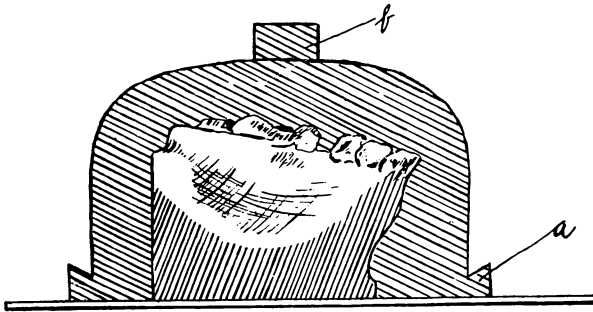


FIG. 2

use, wear and chip, especially around the base, allowing the liquid gelatine to escape while being poured. More serviceable shells can be made of tin or wood.

Figure 4-A shows a case made of wood. It follows the general lines of the plaster shell, is easily handled and works very well, but is rather light, needing weighting down when the gelatine is poured in. I have been using this case in preference to the one constructed of plaster.

Figure 4-B shows a case made in Germany which is constructed of tin. It is an ingenious affair and has its good points, but it does not hold the mould very securely, while the duplicate is being run.

Having the case ready, the model should now be prepared. All that is necessary to keep the gelatine from adhering to the model is to give it a thorough brushing with powdered soapstone, applied by means of a soft camel's hair brush. However, if a more impervious coating is desired, one which will allow of a more ready separation of the model

Preparation of Models.

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from the gelatine, it can be given a very light coating of a stearine mixture prepared by melting two pwts. of stearine in one ounce of kerosene oil. This coating apparently evaporates in a few days, leaving the model practically as white and clean as before. But for those who wish to preserve the original in all its whiteness, a good thorough brushing with soapstone will be found to be quite sufficient. The model should now be lightly fastened to the glass by means of a small pellet of gum. Give the

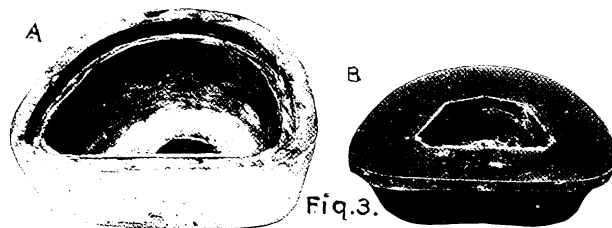


Fig.3.

inside of the case a good coating of the stearine mixture and set it over the model, which should be exactly in its center, leaving an even space all around for the gelatine. Figure 1 shows this very well; the clay, of course, having been removed.

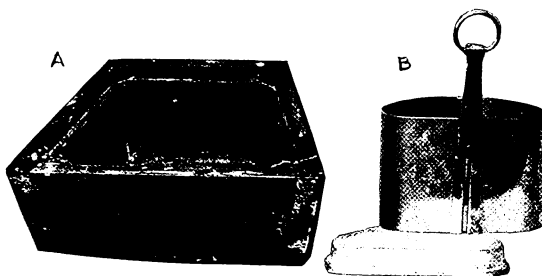


Fig.4.

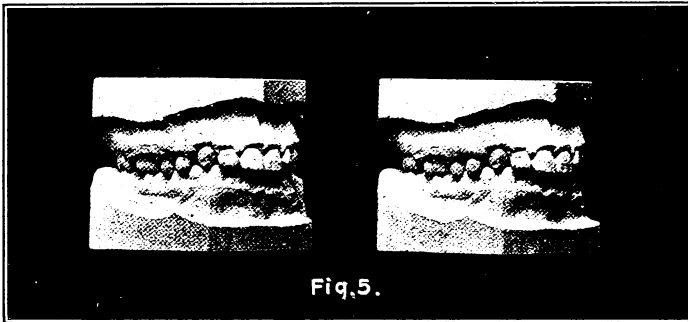
Management of Gelatine.

It is now ready for the gelatine which must be prepared and handled with the utmost care. I have been using the best grade of French gelatine which is made for use in jellies, clarifying wines, etc. It comes in thin sheets put up in pound packages costing forty or fifty cents a pound. Procure an ordinary double boiler in which to melt the gelatine. The sheets should be first dipped in water, then placed in the boiler, with enough water to make it of the proper consistency when melted—one teacupful to one-half pound of gelatine will be about the right proportion.

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It is very important to have it of just the right consistency, if too thick it will not be elastic enough. If too thin, it will be weak and flabby.

Heat slowly, only long enough to thoroughly melt it. In warm weather it is best when melted to add a few drops of carbolic acid, diluted in a little water, to prevent spoiling. Stir occasionally and remove from the fire as soon as melted. It should not be used hot, but allowed to cool to about 95 degrees F., when it will feel neither hot nor cold to the fingers, meanwhile stirring occasionally that it may cool evenly. Pour slowly into the case. If it shows signs of leaking out under the case, a little wad of clay will stop it. Allow it to stand some hours, preferably over night, when the gelatine mould can be removed from the case and



the model pulled from the mould. It should, of course, be worked very carefully in pulling it out, but this can be accomplished, without cutting or tearing the mould or fracturing the model. There may be exceptional cases, however, where slits at the heels of the mould will facilitate matters. Allow to stand half an hour or so after the model is removed so it will settle back into shape.

The surface of the gelatine would not need treating to preserve its shape under the action of the plaster. It should first be brushed with soapstone which fills in the pores and smoothes the surface. After the soapstone is removed, the surface should be brushed over with alum water to harden it. (Alum water is prepared by dissolving half an ounce of powdered alum in one cup of boiling water.) When this is dry, brush very lightly with the stearine mixture which will cause the duplicate to separate more readily from the gelatine. Olive oil or vaseline might be used instead, but are more likely to cause discoloration of the duplicate.

Use the best grade of plaster—one that sets readily, and mix very carefully, in summer using ice water, or the heat generated by setting

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plaster will injure the mould. Paint in the plaster carefully with a brush, gently shaking, to work it to place. Replace the mould in the case, laying a piece of glass over its top to make a smooth base for the duplicate. Remove the model as soon as the plaster is set, to lessen injury from the heat. Brush in a little soapstone and give it a very light coat of stearine mixture just previous to the running of each duplicate. This will keep the surface of the gelatine smooth and allow of ready separation, and also protects it from injury due to the action of the plaster.

Six to eight good duplicates may be obtained from each gelatine mould, duplicates so good that they can hardly be distinguished from the original. Fig. 5 shows an original set of models and a duplicate set.

Gelatine moulds can be kept for a considerable length of time if placed in a cool, dry room and not exposed to the air, but it is best to run all duplicates needed when the mould is fresh, thus insuring greater accuracy.

When through with the gelatine mould, it should be cut into small pieces, spread out on paper in a cool, dry place to harden, thus keeping it from spoiling, as water in gelatine causes it to become mouldy. If it gets grainy or dirty, it should be skimmed and strained through cheesecloth. If well taken care of, the gelatine can be used repeatedly, requiring the addition from time to time of but little new material.

Discussion.

Dr. J. Lowe Young,
New York.

I am very much interested in this paper, and in the results shown this afternoon. The only criticism I have to offer in regard to this paper concerns the measurements, which I think are not scientific. It seems to me that a teacupful is a very indefinite quantity, and I think we should be very particular regarding such details.

This afternoon Dr. Ellis gave me an opportunity to examine many of his duplicates, and in some cases I could not see but that the eighth duplicate was as accurate and perfect as the first one. I could not distinguish anything in the first one different from the original. To my mind this is a very fine showing because I have experimented along this line, but have never been able to show any such results as he has obtained.

Dr. H. D. Keeler,
Baltimore, Md.

I find that by adding a little glycerine in making the gelatine I get a much better result. The gelatine is kept soft, whereas otherwise it gets hard, and will not work nearly so well. I use a very little water to dissolve the gelatine, depending a good deal on the glycerine.



I do not know that there is anything I can add.
Dr. Ellis. There seems to be a lack of familiarity with this subject. I am very glad, indeed, to offer the results of my efforts to the society, and I hope all of you will get as good results as I have succeeded in obtaining. As Dr. Young remarked, shortly before I came here I made a gelatine mould, with eight duplicates, and as far as I could judge the eighth was as good as the first.

Normal Occlusion vs. Normal Dental Relation.

By HERBERT A. PULLEN, D.D., Buffalo, N. Y.

Read before the American Society of Orthodontists, Chicago, Ill., September 29, 1905.

The stirring up of heretofore latent thought concerning the theory and practice of orthodontia by the individual and organized efforts of the members of this society in various parts of the country, has awakened a new interest in this science through the elaboration, by essay and discussion, of the principles of occlusion in its various relations to orthodontia, and although these have been enthusiastically received by the profession as a whole, we have anticipated and are prepared to meet, in a spirit of friendly antagonism, the criticisms and opposing theories of those practitioners and specialists who have been working along somewhat diverging lines in their practice and teachings relative to some of the fundamental principles of the doctrine which we have promulgated, hoping, by a more comprehensive elucidation of the same, to clear up some of the misconceptions which have arisen in regard to them.

In the following and later quotation from an article by Dr. Case in the July, 1905, *ITEMS OF INTEREST*, entitled "Principles of Occlusion and Dento-Facial Relations," an exception has been taken to certain published statements of the writer, on the basic principles of occlusion and their relation to facial harmony:

"Again, the particular phase of the theory which promises that normal occlusion is incompatible with irregularity and imperfection of contiguous facial outlines, has been extensively exploited by the "new school," but in no place has the writer seen it so completely, concisely, and poetically stated, as from the pen of Dr. H. A. Pullen, of Buffalo, N. Y."

The one poetical statement to which Dr. Case refers, is probably the paragraph which credits Dr. E. H. Angle with the discovery of the important relation which normal occlusion bears to orthodontia, and is the

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"radiant star" discovery referred to in the writer's discussion of Dr. Case's paper before the Institute of Pedagogics at Buffalo in 1904, and not the treatment of upper protrusions by use of the Baker anchorage by Dr. Angle, to which later discovery Dr. Case has misapplied my unfortunate lapse into the language of the muse.

Evidently such a lapse into the poetical phraseology is a serious digression from the pathway of practical science, and I assure you that nothing but the personal enthusiasm created by Dr. Angle's discovery of normal occlusion could have called forth the simile and metaphor which Dr. Case is pleased to call poetry.

One statement of mine to which Dr. Case takes particular exception refers to the incompatibility of normal occlusion with any degree of malocclusion, as follows:

"We would have it understood that normal occlusion is incompatible with any degree of irregularity, and with this *ideal* relationship, normal occlusion and normal facial lines are inseparable."

In Dr. Case's subsequent criticism of "new school" theories, his chief arguments have been directed against the verity and soundness of the doctrine expressed in the above quotation; hence I shall take up this statement first, and point out the difficulty which I believe he encountered in understanding it.

You will note in my repetition of the quotation that I have specially emphasized the word "*ideal*," as upon this word alone rests the solution of the misunderstood statement.

Occlusion. In the same discussion of mine in which the above statement occurs, may also be found a definition of normal occlusion, which ought to throw a light upon what we mean by this condition, and I quote as follows:

"Normal occlusion is a condition of *perfect relationship* existing between the normally formed and aligned teeth of maxilla and mandible *when in antagonism*, the mandible being in its farthest posterior position, and in perfect median register with the maxilla, and both in normal relationship with contiguous tissues."

I quote also the paragraph following this definition: "*Such a condition precludes abnormal relationship of contiguous tissues*, such as over- or under-developed alveolar or maxillary zones, or maxillary or mandibular protusions or retrusions, and its *most perfect conception can only be seen in a perfect anatomical subject*."

With these points of preference, normal occlusion and normal dental relation are not synonymous by any means, the former referring to an ideal relationship as specified and limited in the definition, to the perfect anatomical subject, and the exact position of antero-posterior and

median register of the teeth in antagonism (the word "occlusion" giving us the basis for the latter statement, since it means the approximation or closing of the teeth together); while the latter term "normal dental relation" as used by Dr. Case, may refer to any position of the teeth in articulation, since it is unlimited to a position of occlusion, for the word relation is not absolute unless limited or restricted to the exact meaning which it is intended to convey.

Therefore, we cannot agree to the synonymical use of the terms "normal dental relation" in Dr. Case's definition of a standard anatomical articulation. Nor can we accept as synonymous terms, the words "articulation" and "occlusion" as I will show a little farther on in my paper.

We have gone one step farther and defined a position of normal dental relationship, and designated it in its limitations as normal occlusion.

It has been suggested that we use the word "occlusion" alone to designate this ideal relationship; that the word "normal" is unnecessary, because if occlusion is anything it is normal; otherwise, malocclusion is the proper word, but I am not prepared to accept this term without limitations in referring to the typically ideal anatomical occlusion.

Webster says: "A thing is normal, or in its normal state, when *strictly* conformed to those principles of its constitution which mark its species. It is abnormal when it departs from those principles."

In the past, the word "occlusion" has even been used synonymically with articulation. We speak of the "occlusion" of the teeth when we refer to the relation of the interdigitating cusps, whether there is a normal occlusion or malocclusion present, but when we desire to be exact, the specific meaning of the word "normal" in connection therewith leaves no room for doubt as to the interpretation which is intended.

In all branches of art such as sculpture, painting, architecture, etc., a model of perfect art is chosen as a guide to reproductions which represent the highest conceptions of a certain type, whether it be the Apollo in sculpture, the Madonna in painting, or the Renaissance in architecture.

Normal occlusion is the highest conception of a type, not a relative nor approximate condition. It is an ideal state of physical integrity, and, as stated before, can only be perfectly conceived in a perfect anatomical subject, which would necessitate, therefore, the normal, typical and perfect development and relationship of contiguous tissues of the hard and soft anatomy of the bones of the head and face, and the artistic conformation of the overlying tissues which make up the facial lines of beauty and harmony of profile.

Nor do we claim that normal occlusion in the ideal is commonly found in any type, indeed, it is quite the reverse, though we find many

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approaching the ideal to such an extent that they vary but little from perfection.

Again, we do not claim that it is always possible to restore the ideal in any case of malocclusion, but its approximation is best assured by following out the teachings of occlusion in the treatment of these cases.

How near we approach the ideal in results both as to restoration of normal occlusion and harmonious facial lines, we leave you to judge from the published cases which have been treated from the standpoint of occlusion by those who have been working along these lines for some years, and even by those who have only begun the study of occlusion and perhaps have completed but one case restoring the dental arch to the normal in occlusion with gratifying results.

It must be admitted that the term "restoration of normal occlusion" may be only a relative one when used in reference to any case in which the absolute ideal is not established as the result of our efforts, but that does not detract from the fact that normal occlusion is the ideal which gave us the insight into the proper treatment of malocclusion, and the inspiration to work out the intricate problems presenting, no matter what degree of skill we may possess nor how humble our efforts may appear.

With this interpretation of normal occlusion, the statement of the incompatibility of normal occlusion with any degree of irregularity and the inseparableness of normal occlusion and normal facial lines which are the subject of Dr. Case's criticism, cannot be disputed.

Also, with this understanding of normal occlusion, another statement from the same source that "the teeth in normal occlusion may also be quite irregular" must necessarily have been made from a misconception of the requirements of normal occlusion.

Let us mention for further proof the following characteristics of normal occlusion:

1. The normal shape and size (according to type) of each arch.
2. The normal position of each tooth in each arch.
3. The normal shape and size of each tooth (varying with type) in each arch.
4. The normal relationship of each arch to the other, and of the occlusal inclined planes of the cusps of the teeth to those of the other.

This last characteristic must be limited to the most constant relationship between the arches of teeth, to the position of the mandible at rest, the teeth being occluded as when the mouth is closed.

And here is where we must make the distinction between occlusion and articulation, for they are not synonymous terms, though each has its own peculiar relationship to orthodontia and to each other.



Articulation. "Articulation is the relation between the teeth of maxilla and mandible during the lateral and protrusive excursions of the latter, dependent on its universal articulation at the genoid fossa."

There are three distinct stages of articulation, viz., prehension, attrition, and occlusion. The first two represent the mandible in motion, the last the mandible at rest, the teeth being closed.

Occlusion is a passive phase of articulation, while the other two stages are active.

Occlusion represents the static, and articulation the dynamic relation between the teeth of maxilla and mandible.

The very fact that occlusion represents a static relationship between the arches of teeth makes it obvious that it should be designated as the basis from which to diagnose malocclusion.

Diagnostic Value of Occlusion. And now we come to a consideration of normal occlusion as a primary factor in the diagnosis of malocclusion, which our critic also takes exception to in his denouncement of the following statements of the essayists as false teachings:

"The facial lines are dependent upon the normal occlusion for their normal relationship, hence the occlusion is the factor of *prime* importance rather than the facial lines."

"Shall we diagnose a case of irregularity from symptoms which disappear upon treatment of the occlusal relations of the teeth?"

I have given special emphasis to the word "prime" in the first paragraph above, as upon its modification of the sentence depends the soundness and scientific value of the statement.

In other branches of orthopedic surgery the morphological anatomy of the overlying soft tissues is not considered as essential and primary a diagnostic feature as the deformed structure of the underlying osseous structures, e. g., curvature of the spine and club-foot are diagnosed from a primary discernment of the abnormality of the bony tissues underneath. A restoration of the symmetry of the overlying tissues can only be accomplished by a restoration of the normal form and position of the osseous structure which is so deformed.

For the same reason, therefore, the facial lines are dependent upon the osseous structures of the face, the formation and relative positions of maxilla and mandible, and the teeth and their processes, for their harmony or inharmony of form, and a reversal of this natural order of etiological characteristics would be an absurdity.

Consequently, faulty facial lines should be regarded as symptoms

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rather than causes of an existing deformity of the osseous structures underneath.

So it is we have come to look upon the relation of the arches of teeth in occlusion, taking into account, also, the relationship of contiguous tissues, the variation of the normal relationship of the maxillary bones to the other bones of the head, as primary diagnostic considerations rather than the facial lines.

Bimaxillary protrusions or retrusions can be as readily noticed and more exactly diagnosed from an examination of the abnormal relations of the osseous and dental structures as from the superficial examination of the relatively normal or abnormal positions of the lips or soft tissues of the chin, etc.

But aside from the consideration of the primary importance of the occlusal relations in preference to the facial lines in diagnosis, it is the treatment also which furnishes us with a claim for primary consideration, for invariably the underlying osseous structures are primarily treated and restored to normal anatomical relationships as far as possible in any case, and not the facial lines, which conform themselves to esthetic outlines and symmetrical contour only in so far as the underlying structures have been restored to normal relationship and function.

It is true that the consideration of malocclusion and inharmony of facial lines can hardly be separated in diagnosis and treatment, so closely are they associated, but it is also true that "the facial lines are dependent upon the normal occlusion or malocclusion," and they are not interdependent to the extent that the reverse of the statement would have any claim to a serious consideration.

In support of my claim that the teachings and deductions made from the basis of occlusion are not "an erroneous theory of dento-facial harmony," as Dr. Case attempts to show, I wish to quote the following paragraphs from chapter XVII, of Dr. Angle's work on malocclusion of the teeth, relating to general treatment:

"In the treatment of all cases of malocclusion our efforts should be toward the accomplishment of three main objects:

"First, correction of malocclusion.

"Second, establishment of harmony in the relations of the jaws.

"Third, improvement of the facial lines.

"In the accomplishment of these our efforts should be toward the ideal, where normal occlusion, normal relations of the jaws, and harmony of the facial lines are combined. While the ideal is not always possible to gain, yet the best attainable results cannot be hoped for with a lesser standard."

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Treatment along these lines cannot fail to produce "dento-facial harmony," if this means as I interpret it, the restoration of the most esthetic and harmonious lines to the profile, including the establishment of the most ideal conditions of occlusion possible in a given case.

Twelve years ago the theory of occlusion was not recognized as a very essential feature of operations in orthodontia, in fact, occlusion was seldom mentioned as a factor of any importance.

Instead, the regime of the regulating appliance as the factor which gave the trend to progress in this science was at its height if we can correctly judge of general conditions from a quotation from one of the '93 papers of Dr. Case, read at the Columbia Dental Congress. He says: "The practice of correcting irregularities of the teeth has advanced so rapidly under the influence of modern methods of constructing regulating appliances that it to-day bears little relation to dentistry proper, and in its most advanced practice may justly claim a distinct field in science and art."

Because Dr. Case seems to have found a class of cases which were apparently not to be treated by any definite rule as outlined by Dr. Angle in his treatment of cases according to class indications, does it overthrow the whole finely worked out theory of occlusion as a basis of diagnosis and guide to treatment?

It is true that full bimaxillary protrusions and retrusions, and varying degrees of abnormal relationship of the maxilla and mandible do exist, but it is also true that they are very apparent exceptions to the general run of protrusions, and yet, when carefully analyzed, are found to be but modifications of Classes I, II, and III, of Dr. Angle's classification of malocclusion.

The Baker Anchorage.

The idea of absolute reciprocal movement of upper and lower teeth in treatment of protrusions and retrusions with which Dr. Case credits the "new school" is an absurd misconception of the "Baker anchorage" as we choose to call it, since, although Dr. Case may deserve priority of credit for the use of the rubber ligature in producing "inter-maxillary force," the particular method of its later use in the "Baker anchorage," as applied by Dr. Angle, is quite dissimilar to that for which Dr. Case utilized it.

The use of the rubber ligature has been applied by the "new school" as a reciprocating force only in so far as the physical and mechanical characteristics present will allow, and the requirements of the case in which it is applied will demand.

The following are many of the uses to which the "Baker anchorage" is adapted in treatment of malocclusion:

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The use of either arch in phalanx as anchorage for the attachment of the rubber ligature to resist a movement of one or two or more teeth in the opposite arch, for which a greater resistance is needed than reciprocal anchorage.

The upper arch used in phalanx as resistance for the consecutive movement of the lower anterior and buccal teeth when the ligature is applied especially for this movement.

The lower arch used in phalanx as resistance for the consecutive movement of the upper molars, bicuspid, cuspids and incisors, when the rubber ligature is applied especially for this movement.

Its use as an auxiliary to any mesial or distal movement of one or more teeth.

An equally reciprocal movement is not claimed in any of these cases, though it may be and is accomplished in some cases by proper manipulation of appliances so as to restrict the action of the rubber ligatures in one arch or the other as the case demands. An exactly equal reciprocating movement of the upper and lower teeth is not obtained by an unrestricted action of the rubber ligature in any case. As pointed out by Dr. Ottolengui in his editorial on this same article of Dr. Case's, "in order to achieve exactly equal reciprocal movement between two objects bound together by an elastic, it is absolutely requisite that the two objects shall be equally stationary, and therefore equally easily moved.

"There probably never was a case of exactly equal reciprocal movement between two jaws produced by simple intermaxillary force, unrestrained, and, therefore, it would be folly to advocate such an undertaking. By a wild flight of the mind one may imagine two jaws moved with equal ease mesially, or with equal ease distally, but it is not conceivable that one of these jaws could be moved let us say a quarter of an inch distally with the same force that would be required to move it the same distance mesially.

(By jaws in this argument is meant the teeth and their processes.)

"It therefore follows theoretically, that in all mesio-distal reciprocal movement of two sets of teeth simultaneously, the set moved mesially travels a greater distance than the set moved distally, dating such measurement from that period in the work when all teeth are in approximal contact."

The use of the rubber ligature as a means of applying force requires a great deal of judgment and skill in many cases, and it is not to be credited that the "new school" men are entirely lacking in these qualities as Dr. Case would have us believe.

Our critic himself defines the use of the reciprocating force of the

rubber ligature in no uncertain terms in the following quotations from one of his papers read at the Columbian Dental Congress:

"The principal force, therefore, should be exerted upon the anterior superior teeth, and this force may be *reciprocated* by rubber bands extending from the posterior parts of the upper appliance to the anterior part of an appliance that is attached firmly to all the lower teeth."

"When the central features of the face are depressed with anterior superior teeth occluding posteriorly to the lowers, accompanied with the real or apparent prognathous lower jaw, *great reciprocating force* may be beneficially obtained from the rubber bands before mentioned."

Since Dr. Case's use of the rubber ligature seems to have been limited to its action as an auxiliary to other force appliances, as noted in his published statements, the "new school" must be given credit for the conception of its uses as an efficient intermaxillary force, as modified and restricted in the "Baker anchorage."

From the diminutive size of the models as illustrated in Dr. Case's article, it is impossible to make any exact deductions as to the results of his treatment by extraction and patching up the occlusion in most of the cases, but we note that in no case has he restored the normal occlusal relations of the arches of teeth.

Must we conclude from his published cases that the restoration of normal occlusion in these mesio-distal malocclusions *et al.* is not a common procedure with him?

Indeed, a case of normal occlusal restoration would be hard to find among the published cases of any class which our critic has heretofore presented, and yet he states that "the true anatomical and physiological principles of normal occlusion *per se.*, in its relation to orthodontia can hardly be called a 'discovery' of recent years," and that "the teeth in normal occlusion may also be quite irregular."

Theoretically, Dr. Case assumes that we are pursuing false treatment, by restoring normal occlusal relations in cases of malocclusion, but practically our results show more perfect restoration of harmonious facial lines than it is possible to produce by any other method of treatment of the occlusal relations.

Are we to accept such positive statements based upon the inaccurate plaster models presented as evidence and final proof?

Are we to go back to the old regime of extraction in cases of mesio-distal malocclusions of a greater or lesser degree of severity?

Must we, in order to "possess the slightest conception of the higher planes of perfection which marks the sure trend of this department of dentistry," accept a lesser standard than the ideal, with a temptation to

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resort to methods which require less skill in the accomplishment of only mediocre results?

Is the fair-minded student to accept conclusions based upon deductions made from a selection of a few mesio-distal malocclusions which apparently do not conform to the general rules laid down by the "new school" for the treatment of this class of cases?

A negative answer to these questions will surely be accorded by the members of the "new school" and all others who are appreciative of scientific progress along the lines of theory and practice which appeal to sound judgment as being reliable because based upon accurate methods of prognosis, diagnosis and treatment of malocclusion.

Discussion.

Dr. E. P. Berbel,
Columbus, Ohio.

It seems but natural to suppose that in restoring the parts, by bringing the teeth into occlusion, the surrounding tissues would be left in the most normal condition, that is, the nearest to that intended by nature.

Nature may make mistakes in molding features, but are they as frequent and great as those made in attempting to improve on nature by extraction of teeth and bringing parts into relations different from those nature has provided? It is a question how much the orthodontist may with impunity deviate from this apparent facial harmony established by nature for the various types of faces that we present.

We cannot expect, as Dr. Pullen says, to always get ideal results, that is, ideal from our standpoint of observation; but we can get as near to the ideal as possible by putting the teeth into occlusion and establishing the corresponding relations with the tissues influenced thereby.

In the so-called "bimaxillary protrusion" cases, how far is it safe to go beyond the establishment of normal occlusion, by means of extraction? Is it justifiable to carry back still farther the teeth, oftentimes perhaps the roots as well as the crowns, to establish a permanent betterment of the facial contour?

Is it positively known that carrying back the teeth bodily in the upper jaw will not, with the re-establishment of osseous structures, in some way encroach upon the nasal cavity and eventually bring about some unlooked for pathological condition—that is, if the roots remained in new position?

If there is a tendency of the apices of the roots so moved to return to their original position, then, with elongation of the crowns resulting

ORTHODONTIA

from two extensive tooth-movement and their lingual inclination through return of the apices of the roots to their original position, would it result in an improvement of the facial contour over that established by simply bringing the teeth into occlusion? I believe the members of the so-styled "New School of Orthodontia" are all speaking for the truth, whether it be in scientific investigation or through discussion, and are willing to accept the truth when established. I am sure we all feel that we want to progress, but in that progress make our steps sure, so far as possible.

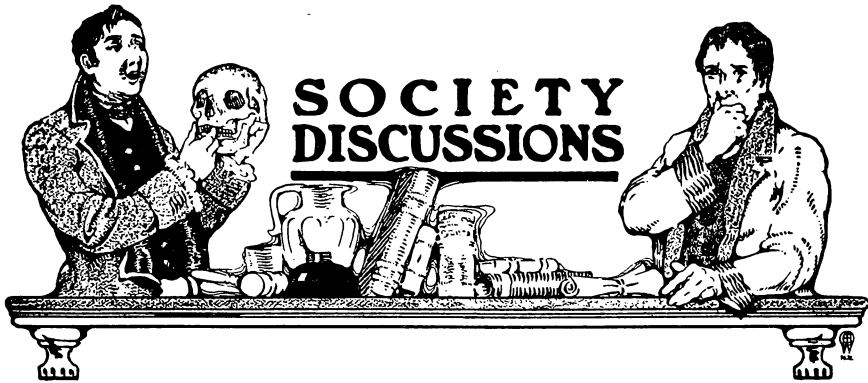
I am sorry there has not been more discussion on
Dr. Pullen. some of the points brought out in this answer to Dr. Case.

It was necessary at the Pedagogical Society meeting last January to define "normal occlusion" in an absolutely specific manner, in order to be exactly understood when speaking of it in the definite relationship which it bears to the surrounding anatomy of the head and face.

If it cannot be shown that normal occlusion is a definite basis for deductions in orthodontia, then must diagnosis be inaccurate and un-availing, and treatment correspondingly indefinite in method and result.

My paper was intended as an argument along these lines, and I appreciate very much the kind reception you have given it, although it did not evoke as general a discussion as I had hoped.





Central Dental Association of Northern New Jersey.

December 18, 1905.

The President, Dunning, called the meeting to order.

On motion the regular order of business was dispensed with.

The President then introduced Nelson P. Shields, D.D.S., who addressed the meeting as follows:

Painless Removal of Unexposed Pulp.

About a month ago I received an invitation to **Dr. Nelson P. Shields.** read a paper before you this evening, but owing to great demand upon my time I felt I should not have the opportunity of preparing a paper worthy of your organization; but my dear friend Dr. Meeker told me to come here and offer a little extemporaneous talk and that your stenographer would take it down and the Society accept it, and so I am here. But Dr. Meeker, not having received a written reply to his invitation, has the title of my subject a little wrong; I do use an anesthetic in one part of the operation, but do not anesthetize to enter the pulp.

Pressure Anesthesia used with Arsenic.

We have all been in the habit of using arsenic, and for a long time I have been trying to reduce the period of the application. When we began to remove the pulp by pressure anesthesia it soon solved this problem, but before I became accustomed to its use I resorted to cataphoresis, as most of us did. We were glad to have anything to avoid the use of arsenic, because in some respects it was and is bad, unless handled very carefully. For a number of years therefore

I used cataphoresis, and it would require from an hour and a half to four hours to remove all branches of the pulp from the different canals in a molar; therefore pressure anesthesia was a great boon to me.

By leaving the application of arsenic in for two days I found I could extract the pulp by the use of pressure anesthesia; but not after two days, because the pulp would be so highly congested that it would be impossible to force cocaine into it by pressure, or by any other means that I knew, and I found it took me quite a long time to reach the pulp from the point where the arsenic had been placed. I tried one day to enter a tooth, with a little patience and diligence without the application of arsenic, and to my surprise I did so, and it encouraged me to such a degree that I can now give you an absolutely definite means of reaching any pulp practically without pain. I speak positively on this subject because I have not yet had one I could not so reach and any statement I make in this paper I stand ready to verify with a clinic before this or any other body.

**Painless Removal
of Pulps.**

For many reasons we must remove the pulps of teeth; because of pyorrhea, when we want to have splints made in order to fasten loose teeth to tight ones; and there are many places where we desire to extract the pulp from a healthy tooth where it is solid and may be used as a post. In performing this operation I begin with a small burr, about No. $\frac{1}{2}$ or No. 1. Use the round burr and enter the palatal surface until the patient feels the least particle of sensitiveness; then take a No. 4 burr and go on directly in the same place until you reach a sensitive spot; then discontinue the use of that drill and take a small round burr and hold it steadily, not drilling with any pressure, but holding it surgically true on that little spot and you will see the little white structure begin to crawl out. Then you will know the burr is advancing and without the patient knowing a thing about it because he feels nothing; after you get to that little sensitive spot again, take a narrow excavator, so narrow that you can go up in that little place where the No. $\frac{1}{2}$ burr entered and with the excavator you get into the pulp so easily that you hardly realize it. When you once reach that pulp, you have a pulp in the prettiest condition in the world for exposure to cocaine; with very little pressure the whole pulp is anesthetized and you can go right in and tear the pulp all to pieces.

I do not take the pulp out entirely, however, without a further application of pressure anesthesia, so as to be sure to have the apex of the pulp fully anesthetized. After the entire pulp is removed, there is a root ready for immediate filling, although I seldom resort to that except in cases of patients who must leave town. In filling canals the es-

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sential feature is to get the canal clean, to take the contents out in a mechanical way and be sure to get out every particle of tissue.

I had not intended to go into the subject of root filling, but with the permission of the society I will discuss that matter briefly.

Root Filling. After the pulp is removed I made an application in the tooth and have the patient come back at some future time not too far off.

About twelve years ago Dr. Watkins invited me to give a clinic before your State Society on root filling, on the filling of practically impossible canals; difficult canals in bicuspsids, canals in anterior teeth and others. That clinic was held at Asbury Park and canals were thoroughly cleansed and filled to their respective apices by this surgical method. From the very minute I extract a pulp I work with the end of the operation in view. From a piece of rubber dam I punch out a number of little indicators, one of which I place on a bristle, and with this I ascertain the depth of the root. I get the length of the root at the very beginning and I keep each patient's instruments by themselves in separate packages. It is the simplest thing in the world to take one of these little rubber indicators and put it over the brooch and ascertain the length of the root and, knowing the exact length, you know exactly where you are throughout the whole operation. After the canal is thoroughly cleansed I take a little piece of Abbey's No. 4 soft gold, which I carry to the end of the canal and you can carry it to the apex just as easily as you can a piece of cotton, and that gold is put there to seal the foramen, right at the apex, and when that is done you can fill that canal with a material that will fill every part of it perfectly and quickly and will have as great a tendency to fill the microscopical tubuli in that root as possible, and that material is oxy-chloride of zinc. After you have the apex sealed with a little piece of gold and have filled the rest of the canal with oxy-chloride of zinc, you have a root filling that you may expect never to fail.

Discussion of Dr. Shields's Paper.

Dr. B. F. Luckey. I came here, Mr. President, to hear about the extirpation of pulps without the use of anesthetics, that being the subject announced on our programme and I must confess to being a little bit disappointed. The paper Dr. Shields has given us has been one of exceeding interest to myself, but there was nothing particularly new in it. The use of cocaine for the anesthetizing of pulps is certainly not new. What I was looking for was a method of removing the pulp without the use of anesthetics, it seemed to me improbable that such a thing could be accomplished and

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yet I did not know but that Dr. Shields, with his reputation for originality, might have been able to formulate a method that would relieve us from the necessity of using an anesthetic in such cases. That he can open a solid tooth to the point of pulp exposure as painlessly as he has described, I do not gainsay; for me to do so seems to be another proposition. There are some patients in whose teeth we can even puncture the pulp before we get the slightest sign of pain; but to do so deliberately in all cases would be very unwise, and as a rule I believe we would find marked indications of very great discomfort, long before we reached that point. We can, by the use of cocaine and pressure, anesthetize the intervening body of dentine so as to approach with apparently little pain, and I think if, after getting the pulp exposed—after having tried Dr. Shields's method—you were first to make an application of adrenalin instead of cocaine, and then follow that with the cocaine, you would get much better results than by the use of cocaine alone. I have used that method in a great many instances and nearly always with success. I cannot do it in five minutes; it takes me, according to the temperament of the patient, from ten to thirty minutes.

Dr. Shields has traveled back twelve years and many in this room will recall the memorable occasion to which he refers. As I remember, when he got through with his positive manner of describing the only certain scientific root filling, with gold, and gold only, and denouncing the sloppy gutta percha that men would insist upon using—he roused the people at Asbury Park and nearly convinced everybody. He may be right. Every man is right according to the light he has, and the results he gets, but what one can do many another man cannot do. A man is always justified in pursuing the course that brings to him the results he is looking for, and if Dr. Shields can get such results with Abbey's foil or any other, that is the right thing for him to use, but I do not think every man could do it.

Gutta percha has been the stand-by of the profession for a long time; many still use oxy-chloride of zinc. Dr. Abbot of the New York Dental College described it as the only root filling, but he had his failures; once in a while he managed to force a little oxy-chloride through the end of the root, for which the patient never thanked him. Some men have been known to force gutta percha through and that has caused trouble, and I believe there are some men who have even forced gold through the root, causing irritation, alveolar abscesses and sometimes even blood poisoning and death. However, I want to say this, when you have painlessly removed the pulp and sterilized the root canal be mighty careful what you insert for your root filling and how you insert it.

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I have enjoyed Dr. Shields's paper very much
Dr. S. C. G. Watkins. as I always do, whenever I have an opportunity of hearing him.

The Doctor's method of destroying pulps painlessly is not a new one, although I do not know that it is practiced generally. I have used a similar method for a great number of years.

The first thing in the paper that struck me was what he said concerning the use of arsenic. He spoke of using it for as short a time as possible, and said that two days was a very short period; that he could use arsenic for two days on the pulp, and then use the pressure anesthesia and anesthetize the pulp so that he could remove it. Am I right, Dr. Shields?

Dr. Shields. Absolutely right.

Dr. Watkins. That strikes me as being very peculiar. At the end of two days, generally speaking, it seems to me we should be able to remove the pulp without needing the cocaine.

Dr. Shields. Not if you make the application superficially, Doctor.

Dr. Watkins. That may be different. After arsenic has been used for two days, it seems to me, it would be almost an impossibility to force cocaine into that congested pulp so as to observe any anesthetic properties at all. I may be talking a little at random, but not because I have never actually tried the experiment; I have tried to force cocaine into congested pulps in various degrees of congestion and I have never had much success. There are a great many pulps that will not absorb the cocaine, either when they are congested or when they are not. So that the little bit of sensitiveness that Dr. Shields mentions becomes a prominent factor at times. I hardly know how he treats such cases with pressure anesthesia. I have been using cocaine ever since it has been used in the east, in fact it was I who first brought it east and presented it to the New York societies and to this society; but I have found a great many cases in which I could not get any special benefit. In a case such as Dr. Shields describes, when once the pulp is reached the operation becomes simple and the pulp can readily be removed, either with cocaine pressure, or with an orange wood point, by driving into it, and just as painlessly as with cocaine anesthesia. I have taken out hundreds of pulps in this way and it is just as painless. There is simply the one little dart of pain, and nothing to shock the patient. The patient does not know anything about what is going on unless he is told, and I have never made it a point to tell my patients what I am

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doing. In that way you can get along in many of these cases without the use of cocaine at all.

Root Filling with Lead Points. In regard to root filling it has always been a conundrum to me how a man could reach the apical foramen with gold foil. Yet I was taught it. I was a pupil of Dr. Wetherby of Boston, and that was his method of filling pulp canals. He was one of the first men who filled pulp canals in that way, and it was always a puzzle to me how he did it. I was never able to so treat the small and difficult canals, but I have always felt that I was successful in filling with lead. When the pulp is removed a piece of lead can be filed down to fit the canal. With a little nick cut around it, about one-eighth, or three-sixteenths, or a quarter of an inch from the end, it is carried into the canal; after it has been perfectly disinfected, a twist is given to it so that the point is left in, thus affording an antiseptic filling of lead in the end of the root. With me it can be carried to the apical foramen very much more easily than anything else. I should mention that I always dip my lead point in chloro-percha before placing it.

I have always been opposed to oxy-phosphate of zinc as a root filling. I have never been able to see the benefit of it, and have always felt that it was a very risky thing to put into a canal, because it is almost impossible to get it out if you ever want to.

Dr. Shields. How about oxy-chloride of zinc?

Dr. Watkins. Oxy-chloride or oxy-phosphate of zinc; any cement. I do not like them as root fillings. I would rather use gutta percha. After first wiping the cavity out, or pumping into the canal gutta percha dissolved in oil of eucalyptus, and then putting in the lead point, or gutta percha point, you will have a tightly filled canal.

Dr. Baker. Dr. Shields's method of removing pulps is not altogether new to me. I have used pressure anesthesia considerably but I have not used his method of exposing the pulp first. With a cavity such as he described, one that will hold any liquid, I have often taken a small crystal of cocaine, allowing the saliva to dissolve it and forced the material into the cavity. In that way you can anesthetize the pulp to a certain extent, and then use a second application of cocaine in the same way so that the pulp can be removed. I have frequently used this method in bicuspid, where there are four walls to enclose the cocaine in using pressure.

When I first started to practice dentistry it was quite generally the practice to fill root canals with gold. In my experience I have filled three. Two of those fillings I have seen at intervals of one to two years,

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ever since, and one I saw recently and the teeth were still in use; but I feel that I can fill root canals with a great satisfaction to myself with gutta percha points and chloro-percha.

I remember the discussion of twelve years ago at Asbury Park when Dr. Shields told us how he could fill the smallest and most inaccessible canals with gold. I do not doubt his ability, but must confess I never tried it myself, for I do not think I would be at all successful. As far as root filling is concerned, I quite agree with him. For the first ten years of my practice I used almost entirely oxy-chloride of zinc, and with a great deal of satisfaction. The only difficulty with it is that sometimes you may go a little beyond the apex and cause trouble; for the past two years I have used gutta percha points and eucalyptus, and while I like the method very much, still I have had some cases which required a subsequent treatment, and I am quite tempted to go back to oxy-chloride of zinc for all root canals.

I did not entirely catch the point of why the operation described by the essayist is perfectly painless, until the pulp itself is reached; I understand that a fine sharp burr used in the direction of the canal, so as not to cross too many of these canals will probably numb the substance of these canals before we reach the pulp, and that I think is probably the strongest feature in the paper; to follow one course as nearly as we can, so that we do not come to new sensations constantly.

I have had a good deal of success in the use of arsenic except in cases of pulp stones. In such cases I find neurocaine gives very good results. I do not fill all canals perfectly, and it is hard for me to believe men when they say they do. Canals are often crooked and it is practically a mechanical impossibility to fill them perfectly, even with gutta percha.

Dr. Shields said he rarely fills a tooth immediately after the excavation of a pulp, and as the operation he describes is such a clean-cut and well-defined surgical operation, I am wondering why, when everything is in a normal condition, without any infection at all, that is not the time of all times to fill a canal? I always make it a rule, in taking out a healthy pulp to go on and dry out that canal and fill it, feeling that I have then the very best surgical cleanliness I can possibly produce. It seems to me that to leave it open is to leave it in danger of infection, and I would like to have Dr. Shields speak on that point in closing the discussion.

I am very much pleased with the discussion; nothing in the world is more gratifying to the essayist than to have his paper well discussed, and you

have handled it just as ably as any body of men could do and I am very much flattered to see that practically all of you agree with me.

Dr. Watkins, in regard to the congested pulp, is entirely right, after the second day; on the third day you cannot force cocaine into the pulp after an application of arsenic. I am now speaking broadly. The paper intended that application to be made in a superficial way, in a tooth having no cavity at all, presumably for an abutment to a bridge—the opening of a cuspid, lateral, central or any other tooth without any cavity. The point of sensitiveness is where all of us old operators stopped and made an application of arsenic in order that we might go deeper. After you have the arsenic in two days you can then use pressure anesthesia and remove the pulp successfully. But it will take you a great deal longer from the point where the arsenic application was made until you reach the pulp than if you had never made an application of arsenic.

The gratifying thing to me is to get rid of arsenic entirely, and I have practically had no use for it since I accidentally—or diligently—discovered this method.

Concerning root filling, if you can enter a canal at all, with an instrument of any size, you can clean that canal, and fill it to the point you have reached, and if that point is the apex, by simply flattening the instrument at the end and taking the soft gold on a piece of punk you can carry it to the apex; when you get the gold to the end you remove the instrument and then go right back again and so on.

Entering into the pulp is so simple that it seems ridiculous, and the filling of roots with gold to the apex is simpler still. You can do it, but you must be careful to put that gold, or any other filling material you may use, at the apex with the longest instrument that will reach that spot. When you carry the gold to the apex you have the apex closed, and when you fill the rest of the canal with oxy-chloride of zinc, that material will reach any inaccessible or curved place. Canals are not round, they are anything but round, and that is the object of using the oxy-chloride after you have the end sealed, but if I were to put oxy-chloride of zinc into a root without first sealing the apex, well I do not think I would be able to sleep after it, and I know the patient would not.

Sometimes a root has more than one apex. I have seen them with a half a dozen, and you must always have all those openings sealed.

Dr. Sanger wanted to know why I do not fill the root immediately. As I stated in the paper, it can be done in cases of necessity. The reason I do not always fill immediately is that it is better for the patient, and you can do the work more thoroughly. If the pulp is not all out, you know it on the second operation, because then you have a little sensation. The first treatment I clean everything out, and have the tooth perfectly

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sterile, and I kept it sterile, and I never expect to see that tooth come back infected. There is only one vital part about a tooth that will make it come back and that is at the apex. And if you take out a pulp for a child, remember these apices are very large, and if the child is young the end of the tooth is not always thoroughly formed; but where there is a distinct apex, try never to hurt that apex, because that is the vital spot in a pulpless tooth; and where the tooth has a sharply defined apex, thank the Lord; and whenever you have a small canal be thankful; do not think you have a difficult thing to overcome, you have the very ideal condition that it is one's greatest desire to obtain, and which will give the greatest benefit to the patient.

In filling a lower tooth with oxy-chloride of zinc, unless you are very careful, if you use any pressure you may throw the patient into agony for two or three days, not because you force it through the apex, but because it goes through the sides.

Now I hope that a resolution will be adopted to have the members take up and try this method so that you as members, and I, will all be of one mind.





The latest addition to the list of dental journals is one with the high ambition of catering solely to professional interests. It has a title five lines in length (which, by the way, it hopes to increase), but will probably be known by the first two words which are printed in black-faced letters, **THE JOURNAL**.

THE JOURNAL (of four dental societies) is a name copied from "*The Journal of the American Medical Society*," and "*The Journal of the British Dental Association*," but unfortunately being the enterprise of four societies, the names of all of which appear on the cover, ordinary persons will be prone to speak of it simply as **THE JOURNAL**, and it is certainly unfortunate that a professional magazine should be handicapped with a cognomen which the New York American has been at such pains to discard.

Vol. 1, No. 1, is before us, quite by accident. There is a "Notice" on page eighteen to the effect that "The allied societies extend the distribution of the present issue beyond their own membership to a selected list of representative dentists, etc." The Editor of ITEMS OF INTEREST evidently is

not on this list, as he did not receive a copy through the regular channels. Perhaps the management of this strictly professional enterprise has such a holy horror of "trade journals," that it will not even exchange with us. The opening article is an "Introduction" in which it is wisely stated that "Every publication should have a reason for its existence and should be able clearly to state this reason to its readers." This **THE JOURNAL** proceeds to do. It appears that to the projectors the time seems ripe to take professional dental journalism out of competition with trade journals, and put the burden upon the shoulders of those that want such a journal. There can be no exception taken to this proposition, and it is noteworthy that **THE JOURNAL** contains no advertisements. This at least is consistent, for with the admission of advertisements all the supposed contamination of trade must begin, even though the publishers themselves be not tradesmen. For the bug-a-boo of your professional journalist is the odd notion that the advertisers control the scientific pages of the trade journals.

THE JOURNAL goes on to explain how it happens that practically all the current literature of dentistry for half a century has been in the form of trade journals, and, apparently overlooking all the real progress that has been achieved, deeply deplores this "paternalism." On this subject we quote as follows: "The time cannot be far distant when it will generally be recognized as unwise and unscientific to entrust the publication of its records to those whose interests are first of all commercial, and whose journals cannot help being influenced by personal gain. These statements seem self-evident and not to need proof."

This is a curious language to find on the second page of the first number of a journal which announces that it is to typify higher professional conduct. It is curious, because it is a repetition of an unwarrantable affront to the existing dental editors, who have given much of their lives for the advancement of a beloved profession, and who probably have professional spirit quite as much at heart as those who hesitate not to use insulting language in belittling others, while lifting themselves upon a pedestal.

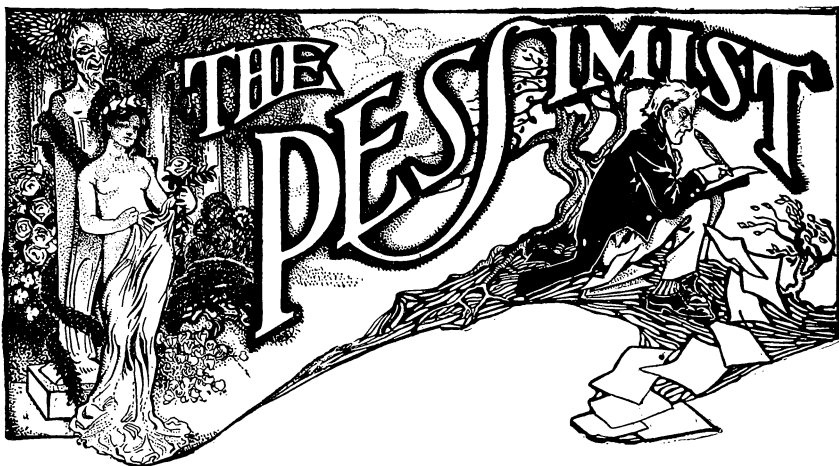
The writer says that his statement, to wit, that existing journalists are influenced by considerations of personal gain in the conduct of the magazines which they supervise—needs no proof. On the con-



trary, such a statement does need proof. It certainly is not true of ITEMS OF INTEREST and we very much doubt if it is true of any other of the first-class dental periodicals.

In thus commenting on the statements of **THE JOURNAL** we mean no personal criticism of the gentleman who wrote the paragraph. He is undoubtedly sincere, and believes what he has written. But what he has written is none the less untrue. We wonder if it would surprise him to learn that a very able and highly scientific article was suppressed by one of the professional **JOURNALS** after which his own has been modeled, and if we remember aright even the return of the manuscript to its author was refused. And we would ask if he can cite a similar treatment of an author by any, "trade journal"?





WHY IS A CLINICIAN? This classic conundrum is closely related to that
 ✦ even more abstruse problem, "Y is the fourth of July?" The latter,
 ✦ however, is what mathematicians call a self-evident proposition. Any
 ✦ child that knows his letters and can count up to four can elucidate it.
 ✦ But the other one is harder, so I may as well tell you the answer. By
 ✦ the way, it is always like that with fellows that ask riddles. They don't
 ✦ really want you to guess. They would rather tell you and show how
 ✦ smart they are. Well then, the answer is, "Look for the axe." ✦ ✦



NO, I DID NOT say hatchet. If it were a question of hatchets, and all clini-
 ✦ cians sported the name George, we could arrive at the truth every time.
 ✦ But so many clinicians are Tom, Dick and Harry, that it is not hatchets,
 ✦ but axes they have to grind. ✦ ✦



I NOTICE A RAY of intelligence illuminating your usually expressionless
 ✦ countenance, and perhaps at last you begin to comprehend the question,
 ✦ "Why is a clinician?" You understand the "why" of it anyway.



OF COURSE THERE ARE professional men, who always do professional
 ✦ work, in a professional way. Sometimes such men chance upon im-
 ✦ proved or simpler methods of accomplishing professional results. Then
 ✦ they attend a professional meeting, where there is a professional clinic,
 ✦ managed by professional men, and they offer a clinic to show these
 ✦ professional brethren all that they know, without fee or reward. These
 ✦ men love their profession. But there are others. ✦ ✦

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THESE OTHERS LOVE themselves. They also give clinics before professional men, but the major part of their work, is to work those professional men. These are the men with the axes, and sometimes there are so many of these axemen at a dental meeting that one might rationally think it a reunion of some old amateur fire company. * *



THUS THERE ARE two classes of clinicians—at least. The professional clinician, and, the other sort. I wonder if you could tell them apart? Let us test it? I'll play I am a vaudeville actor, and you can be the audience. If you applaud in the right place, I'll know you have discrimination. But I hardly expect any applause. * *



LADIES AND GENTLEMEN, I have no desire to deceive you. (That is a lie of course, but it is the regular routine lie, so let it go.) This evening I will give you a few imitations of clinicians (many clinicians are only imitations if they only knew it). I will ask you to imagine yourself in a large hall filled with truly professional dentists. There is not a man present that has a thought for himself. Each one will tell you that his whole purpose in attending that meeting is to give of his knowledge to his brethren. If they in turn give unto him, that is well. But his purpose is entirely unselfish. For the first imitation I shall introduce clinician, No. 1 on the programme. He looks for table No. 1 and finds that it is in a dark corner. Manifestly if he gives his clinic there, it will be impossible to do himself justice, and so his audience will fail to benefit by what he has to show. But the remedy is simple. He takes the card, No. 1, and exchanges it to the table No. 3, where there is more light. Then he opens his grip and begins: "My clinic is to demonstrate the ease with which I can remove a gold crown, usually a difficult operation for the dentist and painful to the patient. But with this new instrument which I have invented you observe that I place one beak at the edge of the crown and one on the occlusal surface, and by simply closing the handles the crown is removed. Simple, isn't it? What's that? The crown is destroyed? Why, of course, my boy. That is the beauty of the device. You cannot repair a crown removed with my instrument. You must make a new one. There is more money in it. One crown removed and replaced repays you for the instrument. What is the price? Well I did want to give this to the profession, but I could not get any manufacturer to take it unless I got a patent. So I took a patent. Even then I found they did not make them accurately, and wanted to charge too much besides. So to oblige my friends I am having them made under my own observation. And I sell them for \$5, just what they cost

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* me. What? Do you suppose I would make a profit out of my confreres?
 * Well! I hope I know what ethics means? You take one? Address,
 * please." * *



CLINICIAN NO. 3, finding his number on table No. 1, in the dark corner,
 * makes no comment. He takes his seat and begins his demonstration.
 * "Gentlemen, if there is one bit of cant in dentistry that I abhor more
 * than any other it is to hear a practitioner say to a patient, 'My filling is
 * all right, but your tooth decayed around it.' Such a man is either dis-
 * honest or ignorant. Were he honest and not ignorant he would know
 * that the best proof that his filling was not right, lies in the very fact
 * that the tooth decayed around it. Now, then, what is the cause of recur-
 * rent caries? Nine times out of ten it means improper cavity preparation,
 * and the other time, improper finishing of the filling. And so, gentlemen, I
 * wish you to examine a few slides with my microscope. The first series
 * will show you sections from cavities apparently cleansed of all carious
 * matter. Yet with even a low magnification you easily see carious patches
 * still adherent, which may be mechanically removed; and infected zones
 * which should be thoroughly sterilized prior to placing a filling. In the
 * next series I show you marginal preparation. By these you see that the
 * proper management of a margin is not such a simple matter after all.
 * There are often what we may term checks in the enamel which escape
 * the eye perhaps, but do not escape the stress of malleting and the after
 * stress of mastication. There is a defect, and sooner or later caries must
 * creep in. It is necessary therefore to cut until you can feel assured that
 * your margins are strong. Do I cut until I reach immune surfaces?
 * Perhaps I would if I knew where the immune surfaces are to be found.
 * At all events I think I get more immunity if I remove all caries, ster-
 * ilize to overcome infection, and make my margins strong enough to
 * resist all stress that will reach it. This added to proper placing and
 * finishing of the filling gives me all the immunity I ever expect in the
 * mouth of a human being." * *



AT TABLE NO. 13 I call your attention to another style of clinician. "Say,
 * get out of the light there. Are you giving this clinic, or am I? Oh!
 * That's all right, old man. No offense meant. I did not recognize you.
 * Howdy! What am I doing? Same old stunt; painless dentistry. That's
 * the demand, isn't it? That's what the people want, eh? Look at the ad-
 * vertising sharks. They know the value of that word. They put it in
 * big type, and big type costs more than little type in the newspapers. Say,
 * what's the use of letting the fakirs have all the glory? Isn't it about
 * time that the scientific dentists should solve the problem of painless
 * dentistry? That's my idea, and this is my idea of how to do it. You've

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* heard about cocaine, and pressure anesthesia, and syringes, and squirt
* guns and all the rest of that rot. Sounds good, of course, and you pay
* twenty or so for the outfit. And the first time you try the thing either
* it leaks; or it backs water; or the case is one of those 'rare exceptions'
* that is what they call 'idiosyncratic' against cocaine. Anyway it don't
* work. But I've got the stuff, let me tell you. Poison? Not a bit of
* it. Look! See me take a poison cocktail" (drinks a few drops out of
* a bottle). "What do I call it? Peterson's Pulp Balm. Dollar a bottle.
* 'Nuff for ten cases. What's in it? Ah! That's telling." * *



AND NOW, PATIENT audience, let us wander into the next room. Perhaps
* we will find a professional clinician in there. Listen! "Gentlemen, it is
* an odd fact that the majority of graduates love to call themselves Doctors
* of Dental Surgery, but when a case comes along that really needs sur-
* gical care, these dental surgeons balk at the surgery. They depend on a
* piece of cotton steeped in some stinking preparation, rather than a clean
* knife and removal of all diseased parts. I had expected to bring a pa-
* tient of my own to-day, a prominent lady of this town. In her case
* from a neglected abscessed tooth it may become necessary to remove
* half of the mandible, but the girl was too ill to attend. However, my
* friend Dr. Q, has kindly brought me a very interesting case upon which
* I shall now proceed to operating." En passant, as our French friends
* have it, Dr. Q pays the clinician one hundred dollars for operating on
* his patient. * *

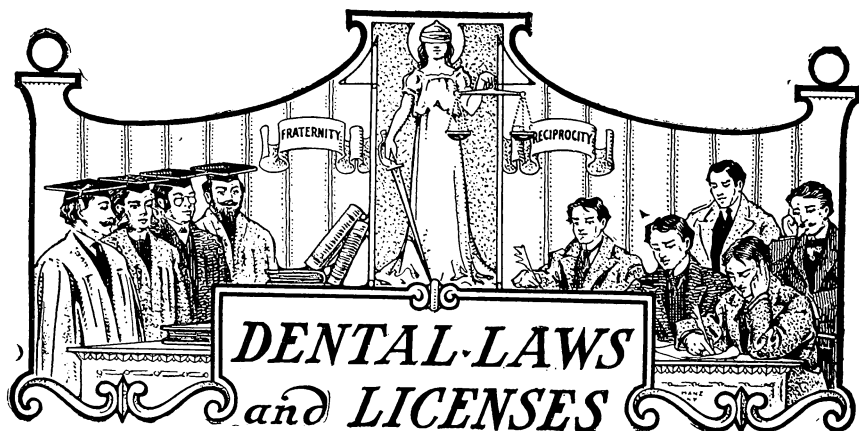


OVER HERE WE HAVE the Specialist Fellow. At table 86 the Fellow is
* making a really handsome demonstration, but he is using several for-
* mulae which he "will further demonstrate at my private clinic in Dr. R's
* office to-morrow." And all that go to that private clinic pay \$25 each,
* or per, which ever way you prefer to put it. * *



AND THERE ARE STILL other sorts of clinicians, and they are increasing
* in number if not in quality annually. Some day I fancy they will be
* classified, and placed where they truly belong, both on the programme
* and in the allotment of clinic room space. But, Dear Audience, have
* you recognized any professional clinicians among my imitations? One,
* say you? Good guess, say I. No. 3 on the programme, working at table
* No. 1. In the darkest corner, shedding his light for all. Three in one,
* in all Creation always the symbol of the perfected creature. No. 3 on the
* programme, but the only A, No. 1, clinician on the list. And now having
* learned the lesson here set forth, keep your eyes open when next you
* wander through a clinic room, and you will see things. You will see
* the grinding of the axes. * *

The Pessimist.



Dental Statutes and License Interchange.

A Reply to Critics.

By Dr. A. W. SWEENEY, Baltimore, Md.

Time having been afforded for criticism of the paper entitled "The Rule of the Minority," the writer will reply to his critics.

Dr. Stockton considers the writer's comments on the amendment to the Asheville Resolution severe. He previously pointed out that much misapprehension about the resolution and the amendment existed, even among Board members. That being true, it is obvious that an outsider could readily share in that misapprehension. Concerning one point, however, there can be no mistake. The Asheville Resolution was designed to remedy a certain condition of affairs which Dr. Stockton, together with many others, considered undesirable; hence all who hold that opinion must deem that condition worthy of severe condemnation.

Reply to Dr. Dameron.

The most detailed and comprehensive criticism of the writer's article is by Dr. E. P. Dameron of St. Louis, Mo., who writes under the caption "Come, Let Us Reason Together." That the heading chosen by the Doctor for his paper furnishes a most excellent suggestion to those engaged in the discussion of legal questions must be obvious, when it is recalled that so eminent an authority as Lord Coke began his treatise on law with these words,—*"Reason is the Life of the Law."* There is, however, a wide difference, at times, between reason and reasoning, and it will be found, upon analysis, that much of Dr. Dameron's reason is quite defective.

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The Doctor admits the writer's statement that the dental laws represent the work of a mere handful of the profession, and claims no other condition would have been possible; but he fails to explain how it has happened that the few who were willing to undertake that labor of love have so frequently and persistently provided laws objectionable to so many. True, he doubts that very many do object seriously to certain of the laws; but the editorial dissent from his opinion is entirely in accord with a fair amount of evidence gathered by the writer during a reasonable number of years. Furthermore, though the confession seems almost lacking in modesty, the publication of the paper which is the subject of Dr. Dameron's criticism caused such an influx of letters of approval, from all parts of the country, that a few, unfortunately, still remain unanswered even at this late date. While admitting that few actively engaged in procuring the passage of the dental laws, the Doctor states that notice is given in advance when a new or changed law is proposed, criticism is invited and members of the profession generally are urged to use their influence with the legislators to further the passage of the desired enactment. Such may be the usage in Missouri; but different methods prevail elsewhere. Continuing his explanation as to the necessarily limited number of those who actively interest themselves in shaping dental legislation, the Doctor claims that the same condition obtains in all legislation and cites the tariff laws as an example. Surely he selected a most unhappy simile. Dental laws are claimed to be purely beneficent, disinterested measures, designed solely to benefit the public. Tariff laws are confessed to benefit a class. Originally conceived and administered in a spirit of fairness and moderation, they have long since grown into a colossal steal, aptly described by a recent writer as measures designed "to legislate the proceeds of the labor of the many into the pockets of the few * * * by means of slyly worded tariff schedules that have changed protection against the foreigner into plunder of the native." Laws made by and for members of a liberal profession should be compared with something less sordid, less typical of insatiable and all consuming greed.

Objecting to the statement that the laws tend largely to tie men to the places in which they may chance to begin practice and to deter young men from seeking advantageous changes of location, Dr. Dameron claims that lack of knowledge ties many rather than the laws, and he further states that those who are fond of making changes are very apt to be of little merit and unlikely to succeed anywhere, either owing to lack of health, or cash, or some equally important requisite, hence, presumably, they might as well remain tied. Continuing, he says that a person of real worth and ability would never be hindered if really determined upon

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a change. The writer knows nothing of Dr. Dameron's experiences; but repeatedly has he been told by men of demonstrated ability and successful experience that they would most seriously hesitate to enter a state where an examination was obligatory; and certain it is that if the Doctor will wander sufficiently far afield outside his native state he will find places where the dental laws are a most serious obstacle.

All know the old adage about the "rolling stone;" but, like many old sayings, there will be found many exceptions. Had dentistry produced no "rolling stones," much of the lustre of its achievement would be lacking. There is probably no city of importance in this country which does not number among its prominent practitioners men who have started practice elsewhere. A notable illustration is furnished in this city by two gentlemen who practiced with marked success in more than one place before coming here. Among the stay-at-home members of the profession, it has not been given to many to attain to such world-wide fame as was achieved by the late Dr. Thomas W. Evans. Equally famous throughout central Europe was the elder Abbott of Berlin. Dr. Edward Maynard may be classed as another illustrious "rolling stone," and so the list might be indefinitely extended. Among the living ornaments of the profession, mention may be made of Dr. Jenkins of Dresden, and Dr. Younger, who has filled a commanding position successively in San Francisco, Chicago and Paris. It is the writer's good fortune to number among his friends, a gentleman, most widely and favorably known, who is, probably, as striking an example of the "rolling stone" as has been evolved from the ranks of the dental profession. He has practiced, literally, in every quarter of the earth, always with great credit and marked financial success. That gentleman once said in conversation that he would advise a young man first to travel and see the world before deciding to settle down permanently. It would seem, therefore, that Dr. Dameron's conclusions as to the probable little worth of many of those whose inclinations might lead them to desire a change of location are not fully borne out by the records.

His Asheville Resolution.

Concerning the Asheville Resolution, the doctor states that no resolution of the National Examiners could serve to modify any of the provisions of the state laws. He is right. That is a fact potent to anyone of ordinary intelligence. A rather interesting condition develops about that fact, concerning which it will be appropriate to listen to a little testimony. Happily there is available some evidence from a most trustworthy witness, Dr. Stockton. In a letter read at the meeting of the New Jersey State Dental Society in July, 1905, Dr. Stockton writes thus:

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"I would like also to say a word on my pet theme, the interchange of license. It is very discouraging that a matter so just and right as the Asheville Resolution should be practically ignored by the State Boards after it has been *twice unanimously adopted* (italics mine) by their representatives in the National Board meetings—at Asheville and St. Louis."

Here is presented the interesting condition. How does it happen that a measure could have been "twice unanimously adopted" by representatives of State Boards only to be "practically ignored" afterward? What were many of those representatives contemplating when they "twice unanimously" adopted it? Have a considerable number of them only awakened since the second "unanimous" adoption, to the fact that such resolutions cannot alter the provisions of the state laws? It would certainly seem that some Board members have placed themselves in a very equivocal situation. Either they must have twice voted for a measure very ignorantly; or else twice pledged themselves by their votes to a course of action which they had no intention of carrying out. Either horn of the dilemma involves a discreditable situation, which the writer is free to say is, in his opinion, worthy of severe criticism.

But though so plain a fact that the Asheville Resolution could not, of itself, modify the provisions of any of the state laws which may be justly called exclusive, it is not a fact that the Resolution has been "ignored" in those states because of dire necessity and against the wishes of Board members. Some still persist in making use of the familiar old phrase "we cannot," when approached on the subject of license exchange; but few are deceived by that well worn excuse. Wherever the Asheville Resolution is "practically ignored," it is not because the Board would like to live up to it if it could, but simply because the members do not desire its adoption.

Public Officials not Interested in Dental Laws.

Neither the public at large nor the state officials (save only examiners) take a very lively interest in the enforcement of the dental laws in any subdivision of our country, if, indeed, in the world. Evidence of this was lately furnished by a Board member who said: "The officials now enforce the law fairly well; but, of course, we have to put them up to it." A recent item in the daily press stated that a young woman who had worked in a dental office had left her place to go about collecting evidence against persons practicing without license. If true, it is a pity the young woman could not have chosen more genteel employment. That the State Boards are allowed great latitude by other state officials is a fact so often demonstrated and so universally known among all well-informed members of the profession that the wonder is that any can yet be found with sufficient assurance to say "we cannot,"

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when invited to show a little liberality in interpreting their laws. That cant is as thoroughly out of date as the once familiar but now discarded claim of the tariff beneficiary, "the foreigner pays the tax." 'Twere more honest and consistent to be blunt and to the point, as was a German, quoted by the writer a dozen years ago, who said of a colleague (no, competitor), whose sign read *Americanischer Zahnarzt*; "Oh, he amounts to nothing; he's no real American. I could break him up if I wanted to, but he don't know anything about dentistry and won't do any harm, so I let him alone." Of course, the German flaunted no high flown ideas about protecting the public. On the contrary, his competitor's ignorance of dentistry was his recommendation. Board officials in this country could not, of course, profess such view as were so freely stated by the German; but they could emulate his candor, and instead of repeating the feeble "we cannot," which has been heard *ad nauseam*, they might better say; "Our law has no provision for granting licenses without an examination. We omitted that provision because we did not want it. If you wish to practice here, we will examine you, and we will do it 'good and plenty.' So far as the Asheville Resolution goes, our delegates voted for it; but—what of that?"

Still another point made by Dr. Dameron is that something more than the Golden Rule is needed in regulating dentistry's legal affairs. Again he is right. But though the Golden Rule may be somewhat inadequate, that fact will not justify an entire disregard of its precepts. There is, probably, no Board member and no single advocate of the exclusive style of dental laws in the entire country who would, for an instant, tolerate the slightest insinuation that he is anything less than a professional man, in the full sense of that term, and strictly and thoroughly ethical. Such being the case, it ought not to be unreasonable to expect from such men—the choice and flower of dentistry—at least a decent regard for some of those higher duties and obligations which we have long been taught to consider as due from professional men to their colleagues.

**Reply to
Dr. Drew.**

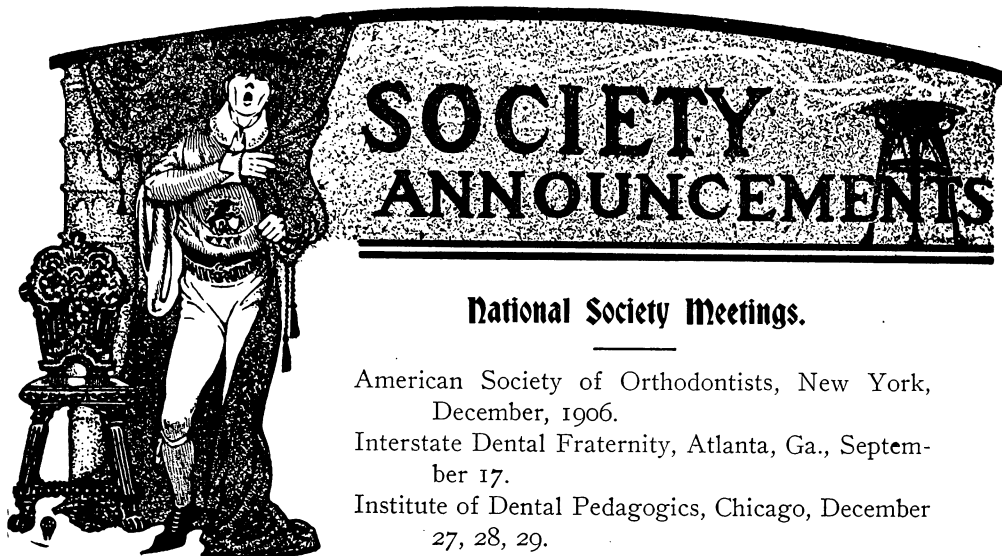
Of the fair and kindly criticism of the writer's fellow townsman and personal friend, Dr. F. F. Drew, one point only will be touched upon. Dr. Drew calls attention to the fact that in the Maryland dental law there is a clause which explicitly authorizes the Board to grant licenses without examination, a discretionary clause. Such a clause should be in every dental law in the civilized world. Some frothy argument has been expended in the attempt to prove such a thing undesirable in certain sections, because of high social and intellectual developments which create a demand for a very high type of dentist; but competent examiners should be able to recognize the desired type, on sight, if pro-

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vided with proper credentials. If the state which is the mother of scientific dental training can afford to have a discretionary clause in her law, what state cannot?

Dr. Drew reverts with some apparent pride to the liberal spirit reflected in the Maryland law. Of course, he knows, in common with all well informed Marylanders, that that manifestation of liberality is but part and parcel of his birthright. His pride is just and pardonable.

At a very early period in Colonial history there was enacted in Maryland a famous piece of legislation known as the "Edict of Toleration," and fortunate it is that tradition and sentiment have not entirely ceased to be of effect, even in these strenuous and intensely practical times. While the New England Puritans, who, according to one of their eulogists, had left their homes seeking "freedom to worship God" (according to their own ideas) were busily engaged in persecuting Quakers and others who differed with them in belief, it was decreed in Maryland that every resident should, forever, be guaranteed absolute and unrestricted religious freedom. The influence of that splendid early masterpiece of legislation has remained vital through the centuries which have succeeded it. It has left its impress upon many an enactment in no wise bound up with spiritual affairs, and though, of course, the proof could not be adduced, those best placed to note it can recognize the reflection of its radiance in the high light of liberality which brightens our dental law. As it was necessary some sixty years ago for those who wished to practice dentistry with the advantage of a systematic course of training and a diploma certifying to that fact to come here to secure them, so now it would be desirable for those who have been so unfortunate as to grow up in an unfavorable environment to borrow somewhat of the liberal spirit of Maryland's dental law, even though it be a fact that there are others which would equally well serve as models. Indeed there is no longer excuse for remaining narrow, Puritanical, reactionary. One course alone is open which will settle the disputes about dental legislation. Laws must be made honest, straightforward, ethical. They must be *designed* and *administered* to guard the public against imposition; not to further the interests of any who may have "pull" or to curtail competition of the honest and capable. Under those laws, there must be freedom to every honest capable, properly attested practitioner to practice when and where he will.



National Society Meetings.

American Society of Orthodontists, New York,
December, 1906.

Interstate Dental Fraternity, Atlanta, Ga., Septem-
ber 17.

Institute of Dental Pedagogics, Chicago, December
27, 28, 29.

National Association of Dental Examiners, Atlanta,
Ga., September 14, 15, 17.

National Association of Dental Faculties, Atlanta, Ga., September 14.

National Dental Association, Atlanta, Ga., September 18.

Interstate Dental Fraternity.

The Annual Meeting of the Interstate Dental Fraternity will be held at the New Kimball House, Atlanta, Ga., on Monday, September 17, 1906.

The meeting and banquet will be in charge of Dr. Thos. P. Hinman, the Vice-President for Georgia. Dr. Hinman's well-established reputation as a host is a sufficient guarantee for a royal good time for all the fraternity who can arrange to get there. Do not miss it.

R. M. SANGER,
National Secretary.

National Association of Dental Examiners.

The Twenty-fourth Annual Meeting will be held at the New Kimball House, Atlanta, Ga., commencing 10 a. m. Friday, September 14, 1906.



The rates per day will be on the European plan from \$1.50 to \$4.00; American plan from \$3.00 to \$6.00, governed by choice of rooms.

Convention hall will be in the hotel, and every effort will be made by the proprietors for the care and comfort of the members.

Arrangements are being perfected for those desiring a short ocean trip for reduced rates, via the Clyde and Old Dominion Steamship Lines, notice of which will be given by circular later.

CHARLES A. MEEKER, D.D.S.,
Secretary and Treasurer.

29 Fulton St., Newark, N. J.

National Association of Dental Faculties.

The Annual Meeting of the National Association of Dental Faculties will be held in Atlanta, Ga., commencing at 2 p. m., Friday, September 14, 1906. The Executive Committee will meet at 10 a. m. the same day.

H B. TILESTON,
Chairman Executive Committee.

R. M. SANGER,
Secretary, Executive Committee,
East Orange, N. J.

First Annual Meeting National Association of Dental Salesmen.

The first annual meeting of the National Association of Dental Salesmen was held co-incident with the big Manufacturers' and Dealers' Meeting at the Auditorium—March 26 to 30, 1906. The object of the association is co-operation and exchange of ideas among the salesmen for the good of all concerned; making the competition by fraternalism among the members friendly, even if keen, and ever holding to the eyes of all the ideal of doing business as a clever man of sense, character and honesty would do it, always giving and always expecting a square deal from his competitor.

Paper by Mr. C. A. Sykes, President American Dental Trade Association, on "The Dental Trade—Manufacturer, Salesman, Dentist," was read, and addresses by Mr. Frank Marimon on "Commercial Amba-



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sadors" and Mr. W. C. Holmin on "Salesmanship" were heard and discussed.

The following officers were elected for the ensuing year :

C. A. C. Kelley, President, Buffalo, N. Y.

Oscar Beig, Vice-President, Philadelphia, Pa.

H. J. Bosworth, Treasurer, Chicago, Ill.

Judson Stackhouse, Secretary, Buffalo, N. Y.

The following were elected as Vice-Presidents to represent the association in their different sections :

C. N. Bowe, Chicago, Ill.

William Doeloff, Boston, Mass.

H. Q. Altenberg, Des Moines, Iowa.

H. A. Callis, Norfolk, Va.

L. H. Herman, Brooklyn, N. Y.

Dr. O. B. Price, Moncton, N. B., Canada.

The Mississippi Dental Association.

The Thirteenth Annual Meeting of the Mississippi Dental Association closed Friday, June 8, 1906, the most successful meeting in the history of the Association. Gulfport proved to be a most enjoyable place for the meeting.

The following officers were elected for the next year :

President, Dr. L. B. McLaurin, Natchez.

1st Vice-President, Dr. L. A. Smith, Port Gibson.

2d Vice-President, Dr. J. H. Phillips, Meridian.

Secretary, Dr. E. Douglas Hood, Tupelo.

Cor. Secretary, Dr. W. H. Reaben, McComb City.

Treasurer, Dr. C. C. Crowder, Kosciusko.

The Association will go to Meridian next year and will meet during the month of May

Great plans were suggested at the meeting whereby the Meridian meeting can be made still better, and it is the intention of the officers to try and eclipse anything ever before offered by any Southern State.

For information at any time, address the Secretary,

E. DOUGLAS HOOD,
Tupelo.



Vermont State Dental Society.

At the Thirtieth Annual Meeting of the Vermont State Dental Society held at Brattleboro, May 16th-18th, 1906, the following officers were elected for the ensuing year:

President, Dr. George D. Mitchell, St. Albans.

1st Vice-President, Dr. C. H. Kent, Barre.

2nd Vice-President, Dr. Harry F. Hamilton, Newport.

Recording Secretary, Dr. Thomas Mound, Rutland.

Corresponding Secretary, Dr. Grace L. Bosworth, Rutland.

Treasurer, Dr. W. H. Munsell, Wells River.

Executive Committee, Dr. Charles F. Meacham, Bellows Falls; Dr. A. Z. Cutler, Bennington; Dr. P. M. Williams, Rutland.

The next meeting will be held the third Wednesday in May, 1907, the place to be decided upon later.

THOMAS MOUND, Recording Secretary.

Nebraska State Dental Society.

The Thirtieth Annual Meeting of the Nebraska State Dental Society was held in the Creighton Dental College, Omaha, Neb., May 15, 16, 17. The following officers were elected for the ensuing year:

President, Norman H. Morrison, Red Cloud, Neb.

Vice-President, Horace Warre, Missouri Valley, La.

Secretary, M. E. Vance, Lincoln, Neb.

Treasurer, H. T. King, Fremont, Neb.

NORMAN H. MORRISON,
Secretary.

Iowa State Dental Society.

The new officers elected at the forty-fourth annual meeting of the Iowa State Dental Society at Des Moines were:

President, Wm. Finn, Cedar Rapids.

Vice-President, C. E. Woodbury, Council Bluffs.

Treasurer, Geo. W. Slingluff, Burlington.

Secretary, C. L. Topliff, Decorah.

The next place of meeting is Cedar Rapids.

C. L. TOPLIFF, Secretary.



Connecticut State Dental Association.

At the forty-second annual convention of the Connecticut State Dental Association held at Bridgeport, April 17 and 18, 1906, the following officers were elected:

President, A. W. Crosby, New London.

Vice-President, F. Hindsley, Bridgeport.

Secretary, E. S. Rosenbluth, Bridgeport.

Assistant Secretary, A. V. Prentis, New London.

Treasurer, W. O. Beecher, Waterbury.

Executive Committee, F. T. Murlless, Jr., Windsor Locks; F. W. Brown, New Haven; F. J. Erbe, Waterbury.

Missouri State Dental Association.

The Forty-first Annual Meeting of the Missouri State Dental Association was held June 5, 6, 7, at Springfield, Mo.

An important feature of the meeting was the adoption of a plan for organizing district societies throughout the state. The following officers and committees were elected.

President, F. G. Worthley, Kansas City.

1st Vice-President, J. W. Hull, Kansas City.

2d Vice-President, J. B. McBride, Springfield.

Rec. Secretary, H. H. Sullivan, Kansas City.

Cor. Secretary, E. P. Dameron, St. Louis.

Treasurer, J. T. Fry, Moberly.

Board of Censors: J. L. Bridgeford, Macon; H. Boatner, Springfield; R. J. Winn, Boliver.

Com. on Ethics: A. M. Tutt, Liberty; J. F. Austin, St. Louis; F. W. Franklin, Kansas City

Com. on Publication: Otto J. Fruth, St. Louis; H. F. D'Oench, St. Louis.

Com. on New Appliances: H. B. McMillen, Kansas City.

Com. on History: B. L. Thorpe, St. Louis.

Com. on By-Laws: J. W. Hull, Kansas City; H. H. Sullivan, Kansas City, J. D. Patterson, Kansas City.

The Forty-second Annual Meeting will be held in Kansas City.

E. P. DAMERON,
Cor. Secretary.